SEPTEMBER 1959

The American City

Seattle's Mayor Gordon S. Clinton (right) and City Engineer Roy W. Morse (left) show APWA President William D. Hurst the city's beautiful and vigorous harbor area. Seattle is host city to this year's American Public Works Association Congress. See page 3.

There are more ways to pave or surface them with ASPHALT

STREETS
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PARKING AREAS
•
AIRPORTS
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SIDEWALKS
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PLAYGROUNDS

Roosevelt Boulevard in Philadelphia, which underpasses the traffic circle, is served by a heavy-duty Texaco Asphalt pavement of the plant-mixed type.

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TEXACO

TEXACO ASPHALT

The American City

SEPTEMBER 1959

ADMINISTRATION AND GOVERNMENT
Our Municipal Notebook 34, 36
Metro Takes Action on the Sewage Problem 111
Municipal Public Relations—
The City Tells Its Story 192

FINANCE AND TAXATION
BUSINESS MACHINES AND SYSTEMS
Adding and Typing a County's Highway Records 101
Grove City Mechanizes Accounting 226
What Is Happening to Real Estate Values and Assessments? 229

STREET CONSTRUCTION AND MAINTENANCE
STREET CLEANING AND SNOW REMOVAL
Mountain Climbing Maintainer 11
Street Striping a Full-Time Job 11
Iowa Provides Payment for Utility Relocation 11
Children Named This Street Sweeper 27
Parking Restrictions Help Snow Control 27
20 Years of Street Resurfacing 98
Winter Is Too Late to Plan for Snow 102
Leaf Collector—
Experimentation Cut Labor Costs 50% 114
The Economic Impact of Elevated Expressway Construction 211

LIGHTING
Big Mercury Lamps in Yonkers 130
Twice As Safe 132
Citizens and City Share Cost in Traverse City 134
Fluorescents for Ohio Housing Development 134

POWER
World's Largest Dual-Fuel Engine 113

SEWERAGE AND SEWAGE PURIFICATION
Cleaning, Dye Testing Improve Sewers 9
Low Cost Mobility at Big Sewage Plant 9
Sludge Builds Park Topsoil 25
Flexible Culvert Overcomes Difficult Soil Conditions 96
Metro Takes Action on the Sewage Problem 111
Sewer Service Charges 185
One Plant Completed and One Under Construction 223

PURCHASING
Montebello's Growth Compelled Central Purchasing 106
Purchasing News 263

TRAFFIC CONTROL
Easton's Seven Years With Plastic Markings 123
Traffic Engineering in Urban Development 125
More Order on Arch Street in Philadelphia 127
Signal Maintenance in Schenectady 129
Meter Maids for Columbia, S. C. 129
The Spelling Wasn't Intentional 129
Complex Two-Way System—
Smooth Operation 141

PLANNING, ZONING AND HOUSING
Citizens' Development Committee 156
No More Offstreet Parking in Congested Areas 161
Density Control Zoning 195

WATER SUPPLY AND TREATMENT
Water Main Laid with the Future in Mind 13
Grading of Water Systems a Possibility 13
Instrumentation and Automation Become Necessary With Growth 92
An Old Plant Gets New Life 108
Modern Water Rates—Part IX 173
50% Expansion Doubles Capacity 201

PUBLIC SAFETY
Police Cars Equipped With Machine Guns 33
Fire Protection in Alameda County 33
Efficient Police Station 116
Better Fire Protection Proposed in Contra Costa County 164

REFUSE COLLECTION AND DISPOSAL
Solid Waste Code of New Jersey 22
Jersey City Solves Refuse Disposal Problem 89
We Rework Our Sanitary Landfill 153

AIR POLLUTION
Air Pollution Control Notes 34

PARKS AND PLAYGROUNDS
Railroads Stage Comeback 25
Sludge Builds Park Topsoil 25
City Solves Narrow Beach Sanitary Puzzle 104
Hack-Proof, Weather-Proof, Kid-Proof Signs 118
Peoria's New Marina and Playground 219
Pre-Engineered Metal Park Buildings 234

MISCELLANEOUS
Small-City Municipal Building 95
A Good County Health Department 120
Columbia's "Fight Blight" Campaign Has Grass Roots Strength 239
We Sample Citizen Attitudes 243

DEPARTMENTS
Letters to the Editor 5
Free Catalogs 42
Zoning Notes 247
Legal Notes 249
City Managers 251
Conventions: When and Where 253
Municipal and Civic Publications 257
Municipal Bond Market 261
About People 280
Professional Service Directory 283

(For Index to Advertisers, see Page 295)

COVER PICTURE

This month, from September 20 to 23, municipal engineers and public works officials from all parts of the United States and Canada will meet in Seattle for the annual American Public Works Association Congress and Equipment Show. The meeting itself will concentrate on such subjects as solid waste disposal, water and sewage, buildings and equipment. However, those attending will have ample opportunity to see many spectacular municipal engineering developments, such as Seattle's harbor (shown), the Lake Washington pontoon bridge, the water department's mountain water shed, and the beautiful Skagit municipal hydro-electric system.

VOLUME 74 NUMBER 9

LETTERS TO THE EDITOR

TEXACO ASPHALT

It Could Have Happened

Only in America

Visitors to our shores usually are pleasantly surprised by the efficiency and availability of American telephone service.

Calls go through promptly and clearly, millions of people in all walks of life have telephones, and the cost is small.

The fact that Americans themselves are seldom surprised by these things is a tribute to the growing excellence of the service.

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BELL TELEPHONE SYSTEM

No More Obstruct Parking in Congested Areas
Density Control Zoning 195
mountain water shed, and the beautiful Skagit municipal hydro-electric system.

VOLUME 74 NUMBER 9

The American City

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Municipal Index	EDUCATIONAL BUSINESS	AMERICAN SCHOOL AND UNIVERSITY

LETTERS TO THE EDITOR

Street Paving Practice

I read with interest the story by Mr. Herbert Callon, City Engineer of Great Bend, Kansas on his city's paving program. Great Bend is to be commended for this ("We Pave for Permanence and to a Long Range Plan," June 1959, p. 96).

We here in Ames have been using a flexible-base paving on our streets for a good many years. With the exception of three streets which are concrete construction, all of our paving programs since 1934 have consisted of 30-inch-wide concrete curb and gutter with a water-bound stone base 6 inches in thickness, and an inverted-penetration surface. We are using stone chips with the asphalt riding surface and in the original construction this builds up to slightly more than ½-inch in thickness. The year after construction, the new street is included in our seal-coat program, adding approximately another ¼-inch of riding surface.

We have found that the maintenance on this type of street construction is by far less over the anticipated life of the pavement than on the concrete streets which had been constructed in the earlier years. The inverted penetration streets require a reseal approximately every three years.

Some of the oldest paving in town is of bitulithic construction. The asphalt in this construction is pure asphalt and not a petroleum derivative. In 1958, for the first time, we resurfaced about three blocks of this construction with asphaltic concrete. This pavement was laid in 1916 and the only maintenance on it has been the filling of cracks as developed in the surface, until our resurfacing program in 1958.

We appreciate the stories of experiences in the other communities, for it is only in this type of idea exchange that we are in a position to improve our own methods.

JOHN M. CARPENTER
City Manager
Ames, Iowa

"Best" City

Permit me to compliment you on the contents of the very excellent editorial entitled "The 'Best' City" appearing in the June 1959 issue of your publication (p. 7).

Having had the rare privilege and opportunity of serving as Mr. Cookingham's assistant over the past few years, I am confident that your analysis and comments concerning his resignation will be received with concurrence by not only those who are acquainted with Mr. Cookingham but also many other citizens who have seen the accomplishments of his endeavors. Finally, your comments concerning Mr. Futterman's appraisal of the municipalities throughout the country are of further interest in view of my recent assumption of the post of Executive Secretary of the Downtown Committee of Kansas City, Mo.

ROBERT M. TINSTMAN
Executive Secretary
Downtown Committee of the Chamber of Commerce
Kansas City, Mo.

Golden Anniversary

Congratulations on your 50th Anniversary year. . . . We too have managed to survive for half a century and thought that you might like to see a small village (Class III, population 1,066) News Letter about our 50th anniversary.

They do say the first 50 is the toughest stage . . . here's to your next 50.

THEODORE C. AGINS
Mayor
Village of Kensington, N. Y.

EDITOR'S NOTE: A neat and interesting newsletter on progress in the Village of Kensington was enclosed. THE AMERICAN CITY sends best wishes to Kensington for its next 50 years.

Traffic Problems

I have accepted an appointment to the position of city traffic engineer, Kansas City, Mo. I undertook my present duties June 8, after spending 3½ years as city traffic engineer for Springfield, Ill.

I would be remiss if I did not thank you for the many opportunities presented to me during the time I directed the Traffic Engineering Department in Springfield to acquaint your readers with some of the typical traffic problems encountered by the smaller city. Furthermore, it is my feeling that the appearance of such articles in national publications does much to attract increased support for local traffic programs. Without this additional local support it would have been impossible for Springfield of-

(Continued on page 18)

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EDITORIAL

Metropolitan Government That Works

Seattle's experience with regional government (see pp. 111 and 112) teaches three obvious lessons:

The public dislikes and distrusts regional or metropolitan government generally. Mr. Average Citizen likes and intends to keep the local governmental unit that he can reach and understand.

The public will accept regional government that performs an understandable function that obviously cannot be performed by the local unit, such as water supply, sewerage, refuse disposal, air pollution abatement.

The governing boards of these regional service units ought to be composed of men from the governing bodies of the local municipalities and other units embraced by the region.

Most of the advocates of regional government will point an accusing finger at the staggering number of local governmental units in this country. In all, we have over 100,000, or about one for every 180 people.

Of course, these 100,000 local governmental units can stand a little closer examination. About 50% are school districts; and while this number may be larger than necessary, nevertheless the affairs of a school district are generally not the concern of the city government—and the officials of these independent school districts do not hesitate to make this point abundantly clear.

Next, about 15% are special districts, often rural, such as drainage, irrigation, conservation. A little over 15% are townships, also nonurban for the most part, and roughly 3% are counties.

This leaves 17%, or slightly over 17,000 that can be classed as urbanized local governments, still a good, solid number. And Seattle's Mayor Gordon S. Clinton decided that some way or another those in his area should find a way to solve their mutual problems together. But their proposal of a Metropolitan Council to simplify area-wide problems was something that the voters just refused to buy.

His experience was by no means unusual. A few years ago, Mayor Ben West of Nashville, one of the ablest municipal leaders in the nation, made a similar proposal and saw the voters turn it down decisively. This is particularly significant since Mayor West rarely guesses wrong on what the voter will accept.

The reason, however, for voter antagonism against "metro" government is understandable. A democracy gains its power through the consent of the governed —and Mr. and Mrs. Average Citizen like this system. But the government that they can reach most easily is their local government, and they aren't going to have it removed or weakened without a strong, compelling reason.

So Mayor Clinton, his fellow mayors and the county commissioners cut back the program to include only sewerage and presented it to the voters not as metropolitan government but as a way to improve sanitation and clean up their beaches. This was something that the voters would accept. They would "buy" sanitation but not supergovernment.

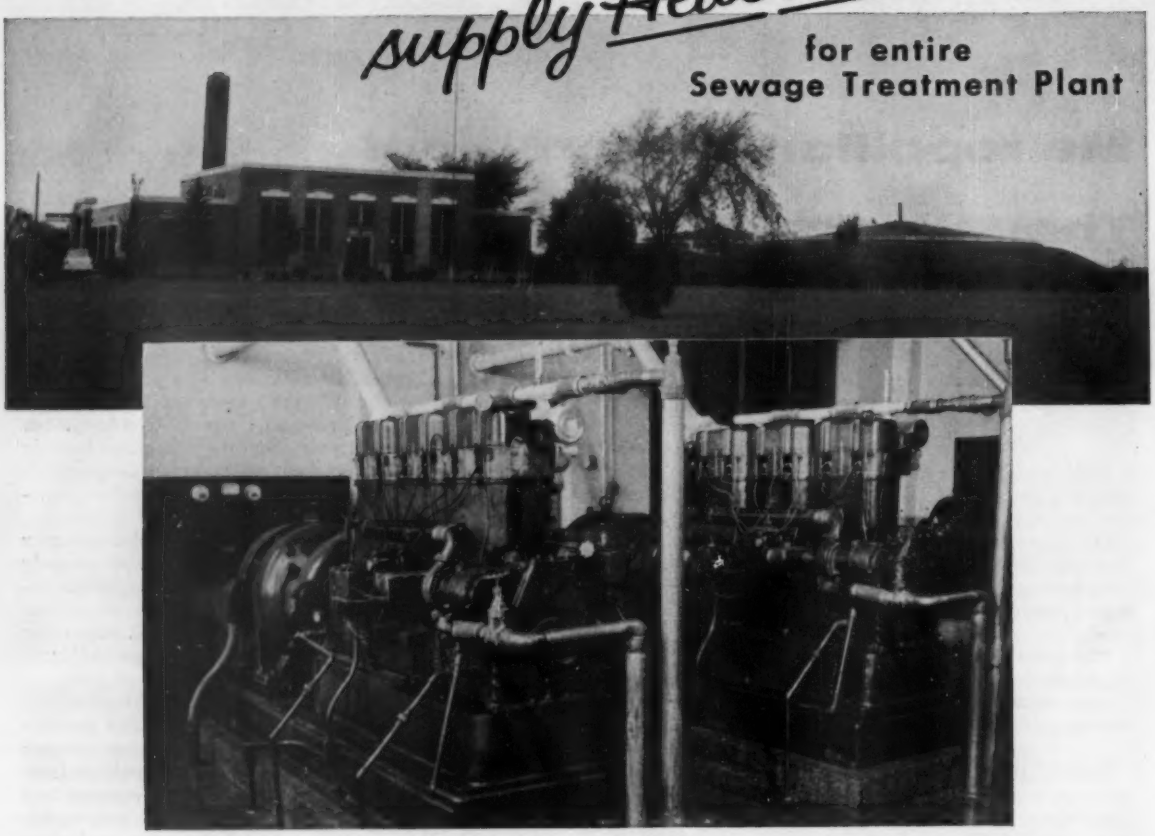
Note also that the Seattle program has another distinctive feature that bears emphasizing. The governing board of this metropolitan organization consists of mayors, county commissioners and councilmen from the area. It is not an autonomous board separate and distinct from the local governments and responsible to no one. This is an important feature not used often enough. It establishes a direct link with the voting public. It maintains that important principle of "government through the consent of the governed," something that an autonomous board or an independent authority generally does not do.

With all the noise one hears about regional government, one would think that it is a new concept. It certainly is not. We have Boston's Metropolitan Park Commission; the Chicago Sanitary District; the Washington Suburban Sanitary District; the Oakland County (Mich.) Refuse Collection Authority; the Los Angeles County Air Pollution Abatement District; the East Bay Municipal Utilities District, outside of San Francisco, and many others. Moreover, we have many examples of one local government entering into a contract with another to obtain services that it cannot perform itself. Nassau County (N. Y.) provides police protection on a contract basis to many of its local communities. Philadelphia receives sewage from many of its suburban neighbors. In California, the City of Lakewood has contracted with Los Angeles County for the performance of most of its municipal service functions.

Metropolitan governmental machinery is growing faster than most realize. But it is being built on the solid foundation of proved need, rather than emotional eloquence.

TWO ROILINE ENGINES supply Heat and Power for entire Sewage Treatment Plant

(Formerly LE ROI)



City of Oshkosh, Wis., sewage treatment plant powered by two Model F-1500 Roiline Engines—1503 cu. in. displ., 6¾-in. bore x 7-in. stroke, counterbalanced crankshaft—each 215 max. hp at 1200 rpm.

Operating continuously, but alternately . . . one engine working, the other standing by . . . two F-1500 ROILINES, driving 50 KW generators, supply heat and power for this entire sewage treatment plant, including the digestors. It is not unusual for ROILINES in service like this to run 30,000 hours or more without major overhaul.

Not only dependable power but low up-keep and long service life is built into ROILINE Engines. With a close-to-perfection combustion chamber that gives you more horsepower per fuel dollar. With full length guided valve stem mechanisms, light weight cam ground aluminum pistons, precision bearings, full flow oil filters, sectional water-cooled exhaust manifolds, large main bearings, full pressure lubrication, and other big features.

For details, send for Bulletin E-9.

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Cleaning, Dye Testing Improve Sewers

Fairview Park, Ohio will shortly join the select ranks of fully sewered cities. With completion of a final portion of a trunk and lateral sanitary-sewer installation project, the community will, for the first time, have separate storm and sanitary sewers serving its 15,000 residents.

This does not mean, however, that all Fairview Park problems have been solved. There are five areas of the city that are subject to flooding even though one system is designed to carry household and domestic wastes and street, roof and parking lot drainage lines are directed by ordinance to storm sewers.

Storm water back-ups during flash storms or prolonged heavy rainfall are natural in any system, because economic considerations dictate design of these sewers on the basis of moderately severe (3- to 10-year-frequency) storms instead of extraordinary (20- to 50-year) storms. But in properly operating storm sewer systems, generally no lasting harm is done to adjoining properties, and excess water is carried off in a comparatively short time after the storm has diminished.

This has not been the case in Fairview Park. Excessive storm water too often has resulted in flooding of basements with water entering through house connections.

The city has launched a two-pronged attack on the problem. Starting in the most severely affected areas, municipal forces are being used to clean all storm and sanitary sewers and to test each main and lateral for leakage or cross connection.

A 3-man crew using a Trojan bucketing machine and a Trojan sewer rodding machine is on a full-time, full-scale cleaning schedule. Work done so far indicates that pipe cleaning will greatly increase capacities of most sewers of both types.

Another three-man full-time crew is dye-testing sanitary and storm systems, section by section.

Storm sewers are higher than sanitary lines in all areas. To determine the extent of direct leakage from storm to sanitary lines as the results of breaks or defective joints, storm sewers are filled with water and dye is added. If the dye appears in the sanitary line, infiltration is proved.

To determine the size of the break, joint leak or other infiltration, water level in the sanitary sewer prior to filling the storm main is compared with the level afterward.

A second test by this crew is for detection of storm run-off from roof drains that are connected to sanitary house drains, either by error or design. Dye is placed in the roof drain to be tested and it is flushed down the leaders with a garden hose. The dye will appear in the sanitary sewer only if improper connections have been made. On one street alone, 50% of all roof drains had been connected to sanitary, instead of storm sewers or the curb.

The city code requires all roof drains, parking lot drains and any other storm-water facility to be connected with storm sewers. Owners of properties with improperly-connected drainage facilities are bound by ordinance to correct the condition.

The survey, cleaning and testing of one critical area has almost been completed, and corrective steps are being taken. It is hoped that during this year the other four problem areas can be relieved of flooding in the same way.

Elimination of flooding in these areas, plus cleaning of sewers throughout the city, will provide Fairview Park with the finest service in the region.

Total costs for cleaning and testing every foot of the separated systems will be about $15,000 per year. If—as has been indicated—solution to problem areas is achieved by the program, officials and residents alike are convinced that the money is well spent.

PHILIP DEARBORN
Safety-Service Director
Fairview Park, Ohio

Low Cost Mobility At Big Sewage Plant

This trailer-scooter combination provides mobile emergency fire protection to all parts of the sewage treatment works.

Six Cushman Trucksters, two equipped with trailers, provide fast but economical movement around Cincinnati's Mill Creek Sewage Treatment Works. One trailer has been equipped as an emergency fire protection unit, including valve keys, chlorine masks and all purpose masks as recommended by the city's fire department. The other is for general maintenance.

Operators using these units may be paged by Stromberg-Carlson Pagemaster units fitted to each scooter. These sound an alarm for a specific individual when he is wanted. He then proceeds to the nearest telephone and calls the central office.

The scooters operate at about two cents per mile compared to five cents or more for passenger cars.

This Cat No. 12 Motor Grader is undercutting banks down 28 inches deep in St. Anthony Village, Minnesota. Cutting both sides, it averages about 8 blocks a 10-hour day in compacted hardpan. Owner: J. A. Denens & Son, Inc., Minneapolis, Minn.

LOOK! THESE IMPROVEMENTS IN THE No. 12 PAY OFF IN EVEN HIGHER PRODUCTION!

■ Increased throat clearance ■ New blade, lift and circle ■ One-piece case for transmission and final drive ■ New, two-tooth power control clutches ■ New, positive mechanical lock

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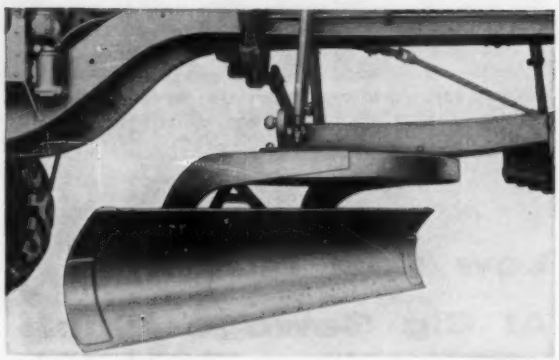
3 There's a new, stronger one-piece case for the transmission and final drive. This eliminates possible leakage at gaskets. In addition, transmission bearings have been strengthened for longer gear life.

4 New mechanical controls for reduced kickback, easier engagement. New power control clutches have two teeth, instead of four, and improved contact angles. They are more positive to engage, easier to hold in position.

5 New blade controls feature a positive mechanical lock—exclusive with Caterpillar. When the control is in neutral, the power shaft is locked by a set of gear teeth to prevent creeping.



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BEST BUY FOR YOUR TAX DOLLARS

Mountain Climbing Maintainer

Street maintenance can be an uphill job in Manitou Springs.

It is no cinch to keep 25 miles of gravel-surfaced streets in good condition for the 4,500 people in Manitou Springs, Colo., particularly when most of the streets climb up the sides of the rugged Rocky Mountains.

Nevertheless, Superintendent of Streets Ross Knickerbocker, and a crew of five men manage to keep the streets in serviceable condition by giving the city's Huber Warco maintainer a real workout. Often heavy rainfall washes deep ruts in the roads. Occasionally the 14-mile road to the city's water reservoir is washed out. Heavy snows have to be removed. However, the crew and the maintainer manager these tasks handily. The sliding mold-board, they find, has proved a great aid in keeping the roadways in good condition.

Street Striping a Full-Time Job

This year the Cook County (Ill.) Highway Department will use about the same quantity of paint for street striping as 10,000 do-it-yourself home owners will spread in the same time. The county's 1959 program will require 10,000 gallons of white paint and 1,500 gallons of yellow.

The county department has the responsibility of maintaining approximately 525 miles of concrete and bituminous roads, which include streets or parts of streets in many Chicago suburbs as well as highways in open country. Rather than follow a definite time schedule, the department follows the policy of renewing all painted stripes as often as necessary to keep them clearly visible to motorists both day and night.

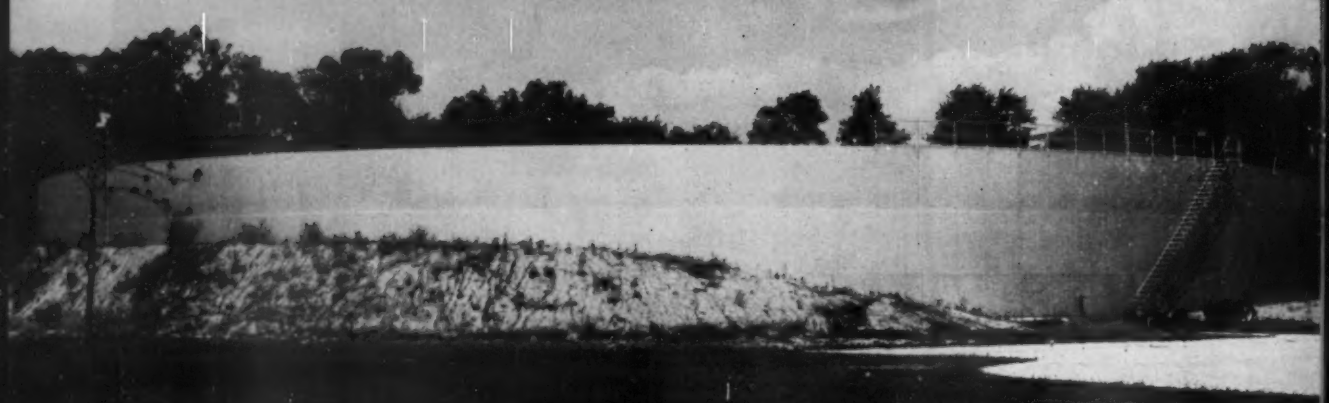
To keep up with the job, the county uses a modern striper made to department specifications by the M-B Corporation. A White truck chassis mounts three paint tanks of 700 gallons each and a vane compressor that produces 125 cfm. A carrier with four paint guns and bead dispensing equipment trails behind the truck. The two center line guns and the center line bead distributor are automatically controlled by a timer device. On four lane roads, the machine can put down the yellow center lines and both white lane stripes at one time if the road can be closed to traffic. With the aid of outrigger arms, it can do all the lines on a three or four-lane expressway at one pass.

Iowa Provides Payment For Utility Relocation

Any interstate or defense highway to be built in Iowa will have to anticipate the cost of reimbursement for the relocation of water, sewer, electric, gas and other utilities when the relocation is made necessary by the highway construction.

According to W. O. Price, Iowa State Highway Commission, the payment was authorized by the Iowa legislature in the last session in a bill known as House File 446. The bill further provides that the amount of reimbursement may be determined by condemnation, if necessary. The bill passed both houses of the legislature and was allowed to become law without the signature of the Governor. The law applies to existing lines only and not to installations which may be made in the future and are later required to move.

WILL YOUR NEXT TANK OR RESERVOIR GIVE YOUR COMMUNITY THESE PROTECTIVE ASSURANCES?



. . . It will, if it is CB&I -BUILT. . . of WELDED STEEL CONSTRUCTION

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CB&I STEEL TANKS are stable structures. There is no loss in effective strength of material with the passage of time.

CB&I-BUILT STEEL TANKS are the *responsibility* of CB&I through all phases of design, fabrication and erection. Almost 70 years of engineered *craftsmanship in steel* back every structure. This is your assurance of predictable maintenance costs and long service life.

Be *glad* you can take steel for granted. When your community next considers water storage, remember, *only* steel can *assure* you long term, low maintenance storage —because it is backed by the accurate control and protective assurances established by the American Water Works Association.

Write your nearest CB&I office for further details. Ask for the new bulletin: *Next Door Neighbor to Millions.*

Above: 10,000,000-gallon Horton Cone-roof reservoir meets increased water demands at Oakland County, Michigan.

Below: 10,000,000-gal. Horton® reservoir helps to supply increased water needs at Spokane, Washington. Structure is 240-ft. in diameter.

Cooperating with the *Water Resources Council* program.

CB&I

Chicago Bridge & Iron Company

Atlanta • Birmingham • Boston • Chicago • Cleveland • Detroit • Houston • Kansas City (Mo.)
New Orleans • New York • Philadelphia • Pittsburgh • Salt Lake City
San Francisco • Seattle • South Pasadena • Tulsa
Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY,
GREENVILLE, PA. and at NEW CASTLE, DELAWARE.
In Canada: HORTON STEEL WORKS LTD., TORONTO, ONTARIO

Placing the water main inside a larger pipe serves two purposes. The line can be repaired without excavating through the concrete pavement and in case of a leak water is carried to the side of the roadway. Only the part of the main passing under the roadway is encased.

Water Main Laid With the Future in Mind

Water mains, once buried, are expected to remain trouble-free for many years. But many unforeseen things can happen to underground structures and the water engineers of Tacoma, Wash., took this into account on a recent job of considerable importance. The job consists of a 20-inch cast iron main "buried" in a deep cut under a four-lane freeway now under construction.

In constructing the trunk line, Water Superintendent A. J. Benedetti employed a method of installation, using split concrete pipe, that is seldom used in the Pacific Northwest. The 20-inch line was placed inside a 36-inch concrete pipe.

Should anything go wrong, repair crews will dig near the sides of the concrete roadway, pull out the damaged pipe and make whatever repairs are necessary. The concrete casing also will permit water to spill out on the freeway's sides rather than underneath the concrete pavement should a leak occur.

The trunk main is part of the Water Division's primary distribution system. It carries water from the main river source, and from a system of wells, to residential and business establishments throughout the southern sections of the city.

Building a four-lane freeway necessitated the lowering of this 20-inch water line.

Grading of Water Systems a Possibility

Can water systems be numerically graded? The AWWA task group on rating water systems, under the chairmanship of John H. Murdock, Jr., hopes to complete such a system in about six months.

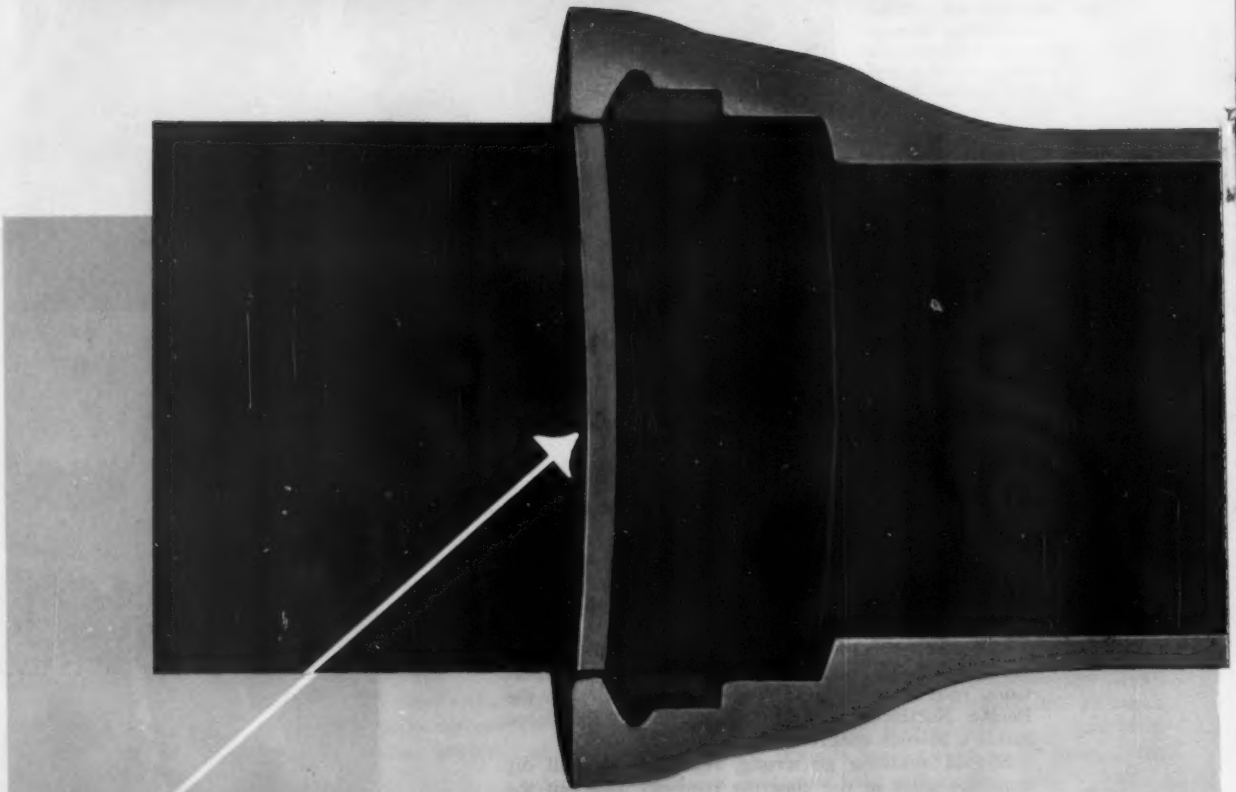
The objective of the task force is to develop an Association-approved method by which local water utilities may be graded numerically to indicate the degree of excellence attained. Various utilities would apply the method to their own system and do their own grading. AWWA would merely establish the criteria; it would not do the grading.

Criteria must be uniform but so designed that a local unit will not be penalized in its rating because of natural or unavoidable conditions. Criteria must also be strictly objective and each rating must be based on established facts and figures rather than opinions, so that any two investigators studying the same system at the same time would come up with identical ratings.

The task force lists two important requirements of such a program—recognized standards and a definition of a "unit of service" for water utilities so that operating costs in man-hours and in materials can be shown in costs per unit of service.

Cooperating with the *Water Resources Council* program.

CLOW



This YELLOW STRIPE on

CLOW Bell-Tite Joint Pipe

is your guide line to a quick bottle-tight seal

This circular yellow stripe is painted on the plain end of each length of CLOW Bell-Tite Joint pipe. It serves as a guide in making up the joint, to provide a fast, positive visual check that the the joint is completely and correctly assembled.

The edge of the stripe farthest from the plain end measures approximately one-half inch less than the depth of the Bell-Tite bell. Thus, in assembly, the joint is made pressure-tight when the stripe is no longer visible.

The seal is achieved by the use of a single, thick-section, high durometer molded rubber gasket. When compressed in position by the entering plain end of pipe, it forms a pressure-tight seal with generous sealing area which permits ample deflection to meet casual curves or grades.

CAST IRON

with patented* Bell-Tite Joint

*Patent No. 2898131

MORE MAIN FOR YOUR MONEY

Costs less to buy

Only one accessory is required to make a pressure-tight seal with a CLOW Bell-Tite Joint —a single, molded rubber gasket. There are no extras—no bolts, no nuts, no followers, no couplings. This economical pipe is strong, tough, uniform and durable for long-life underground service. It is available in any specified thickness or weight class in accordance with ASA, AWWA, or Federal specifications from 3" to 24".

Costs less to install

Assembly is quick, simple and easy. Pressure-tight joint is formed instantly by merely inserting the rubber gasket and pushing the pipe home to its seat. It can be installed in a wet trench and even under water. Rate of installation usually is limited only by speed of excavation. It permits ample deflection for casual curves or grades. Bell-Tite Joint pipe is Underwriters' Listed for working pressures up to 350 psi. Available in diameters up to 24".

CLOW CAST IRON PIPE

JAMES B. CLOW & SONS, INC.

201-299 North Talman Avenue, Chicago 80, Illinois

Subsidiaries:

Eddy Valve Company, Waterford, N.Y.

Iowa Valve Company, Oskaloosa, Iowa

WHAT WILL WINTER SALT-SLUSH

BANOX® STOPS

Salt does two things. It removes snow and ice effectively without post-thaw clean-up problems. It also corrodes automobiles, metal bridges, lamp posts, manhole covers and other public equipment.

Banox, added to salt, stops this corrosion.

Easy to mix with salt (or to buy ready-mixed in some areas) Banox can protect an entire city for only a few cents per capita.

INSTANTANEOUS

(Continued from page 5)

DO TO THE SUMMER SCRATCH?

SALT CORROSION!

Don't let winter slush turn the casual summer scratch into gaping rust and expensive maintenance costs. Find out how non-toxic, inexpensive and easy-to-use Banox can allow effective snow removal safely.

Contact your nearest Calgon/ Hagan representative or write for free booklet 420-12-3.

CALGON COMPANY
DIVISION OF **HAGAN** CHEMICALS & CONTROLS, INC.
HAGAN BUILDING, PITTSBURGH 30, PA.
In Canada: Hagan Corporation (Canada) Limited, Toronto

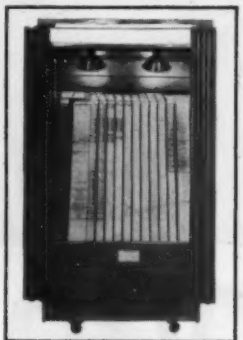
INSTANTANEOUS RESULTS

for better elections

Only on the Shoup Voting Machine does the total vote for each candidate appear on the face of the machine right under his name. These individual totals (which are covered by steel shutters while voting is in progress) can be copied directly without decoding, and are available immediately at the close of the polls. Keys used to expose results cannot be removed, and no one can vote again or change the count.

The confusion, and chance of error inherent in the lengthy process of transferring totals from the back of a machine to tally sheets by means of a complicated code are completely eliminated. Furthermore, it is possible to obtain a permanent record of the count by taking a photograph of the face of the machine showing both the candidates' names and their totals in the same picture.

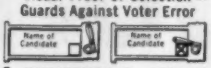
Shoup Voting Machines are designed to fill every ballot requirement and comply with the election laws of all states. They are the only voting machines that duplicate the traditional vertical paper ballot with which voters are familiar. They are fool-proof and fraud-proof, reduce voting costs, and insure greater speed and accuracy of results. Impartial surveys prove the Shoup Voting Machine superior . . . more perfectly designed and constructed to meet the requirements of the voting public. That's why more and more communities, from the smallest to the largest, are using Shoup Voting Machines for better elections.



The ABC's of Superiority...

A. THE VERTICAL TYPE BALLOT (see illustration)

B. THE MOVING X MARK – Visual Proof of Selection – Guards Against Voter Error



C. INSTANTANEOUS RESULTS BY CANDIDATE'S NAME Directly on the Face of the Machine No Decoding Necessary

28 States Already Use Shoup Voting Machines

SHOUP

THE SHOUP VOTING MACHINE CORPORATION

EXECUTIVE OFFICES: 41 E. 42nd St., New York 17, N.Y. • SALES OFFICES: 1701 West End Ave., Nashville 3, Tenn.

the voting machine that looks like a ballot

(Continued from page 5)

ficials to establish in a period of only three years a traffic program which has received four awards in the Annual National Safety Council Traffic Inventory.

JOHN E. HARTLEY
City Traffic Engineer
Kansas City, Mo.

Best City, Leading Magazine

It was with a great deal of interest that I read your editorial entitled, "The Best City," in the June issue of THE AMERICAN CITY. This is certainly a provocative editorial and one which underscores the growing import of local government. I particularly like your Confucius story and think it most apropos.

Your thought in the final paragraph is most praiseworthy, though I believe that you are being unduly modest in crediting other periodicals in developing a newsworthiness about good local government. I am sure that the record will show THE AMERICAN CITY was one of the pioneering magazines in this field; of course, I do realize that your approach is from the inside out.

You and your staff are certainly to be commended for the fine product which you turn out each month.

STEPHEN J. MATTHEWS
Executive Director
Texas Municipal League
Austin, Texas

EDITOR'S NOTE: Mr. Matthews has a long, active career in municipal administration. He was city manager of San Antonio prior to his appointment as executive director of the Texas Municipal League.

"Good Doers, Poor Sellers"

Your whole editorial in the July issue sounds as if I had written it myself. All the things which you mention are those which we have been preaching and hammering at for the last ten years in Philadelphia ("Water Works Men—Good Doers, Poor Sellers," July 1959, p. 7).

I hope that THE AMERICAN CITY keeps up the work of preaching to water works men the need to be actively selling their industry and product, rather than just having the community take it for granted.

SAMUEL S. BAXTER
Commissioner
Water Department
Philadelphia, Pa.

For more facts, turn page

Never before such durable metal protection

Proof M50 pigment Defense in Depth paints deliver up to 300% greater content of rust-inhibitive ingredient

Exposure tests make it plain! Paints containing M50* basic lead silico chromate pigment do more to prevent rust. Look at the panels above. These primers were applied (2.0 mils, dry) over rust and mill scale (to intensify severity of the tests), then exposed 12 months at Perth Amboy, N. J. in an industrial atmosphere and 12 months at Sayville, L. I. in a normal atmosphere at 45° South. Clearly, the rust arresting action of M50 pigment is significant.

Research analysis of tests like this prove an *M50* pigment Defense in Depth paint provides substantially more rust-inhibitive action than comparable paints made with conventional pigments. You can see one reason for this. The configuration of the *M50* pigment particle provides a more efficient way to take advantage of the well-known rust-inhibitive properties of the active ingredients (fused lead chromate).

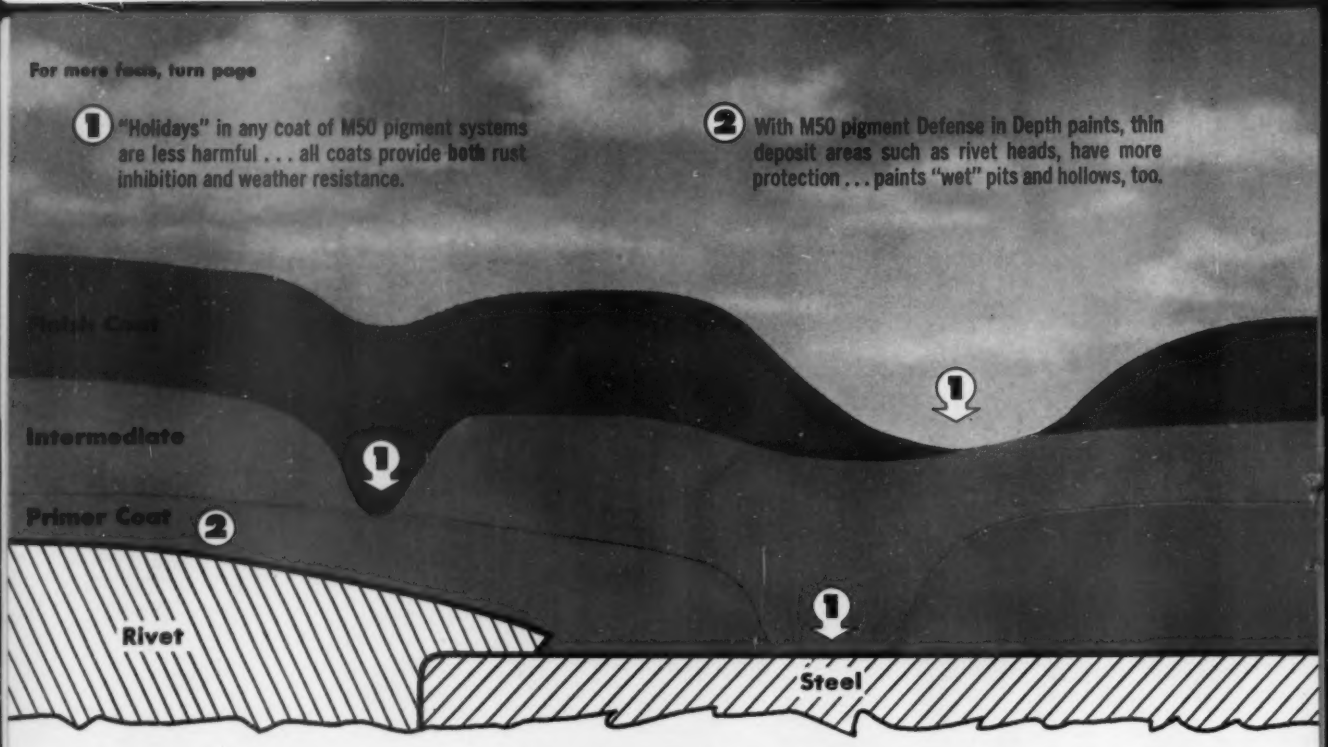
Second reason for the improved anti-corrosive action of *M50* Defense in Depth paint systems is the versatility of the *M50* pigment. Unlike other rust inhibitors, the inert-core particle is technically desirable and economically practical for use in intermediates and finishes . . . not just in primers alone. *Each* coat in an *M50* pigment system can be given substantial rust-inhibitive properties in its own right. Hence total rust-inhibitive pigment content of some *M50* pigment systems exceeds the rust-inhibitive content of comparable non-*M50* pigment systems by as much as 300%.

See on the next page other ways *M50* pigment Defense in Depth paints step up metal protection. See also how National Lead is prepared to help you get these superior specification products from your regular paint suppliers.

*Registered trademark of **National Lead Company**

General Offices: 111 Broadway, New York 6, N.Y.

For more facts, turn page


1 "Holidays" in any coat of M50 pigment systems are less harmful . . . all coats provide both rust inhibition and weather resistance.
2 With M50 pigment Defense in Depth paints, thin deposit areas such as rivet heads, have more protection . . . paints "wet" pits and hollows, too.
Finish Coat
Intermediate
Primer Coat
Rivet
Steel

Schematic section through 3-coat M50 pigment Defense in Depth system shows new paints provide two performance extras

Information on the preceding page proves that *M50** pigment Defense in Depth paints deliver inherent rust inhibition well beyond that available in other anti-corrosive paint systems.

Diagram above shows two additional performance extras. Because *M50* pigment coats give more protection over thin deposit areas . . . because breaks in *M50* pigment coats traceable to damage or painting mishaps are less harmful . . . the need for on-the-job spot priming and touch-up is greatly reduced. Then, too, *M50* pigment primer coats are not only rust inhibitive but also weather resistant. Re-priming is rarely needed.

Other advantages of *M50* pigment paints include a broad choice of colors in all coats, with excellent tint retention.

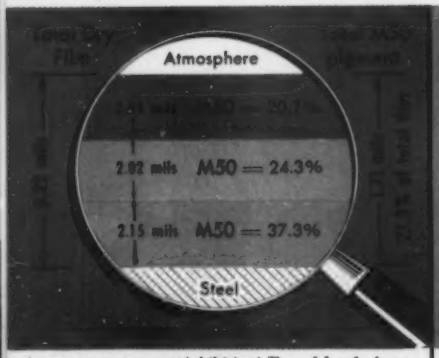
Are you responsible for steel structure maintenance?

If so, you are invited to examine exposure tests of *M50* pigment paints at National Lead's Sayville, L. I. test station. National Lead will also:—(1) send you a 24-page descriptive brochure, "Defense in Depth." (Mail coupon below); (2) provide technical aid in test applications; (3) help you develop suitable specifications for paints containing *M50* pigment.

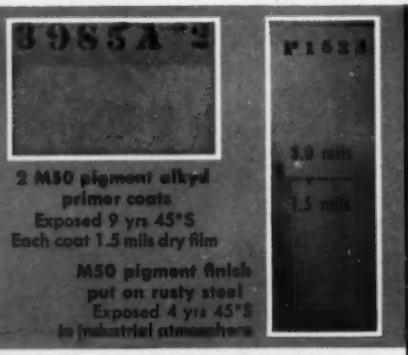
For M50 pigment paints themselves, contact your regular suppliers.

*National Lead Company trademark for a basic lead silico chromate pigment

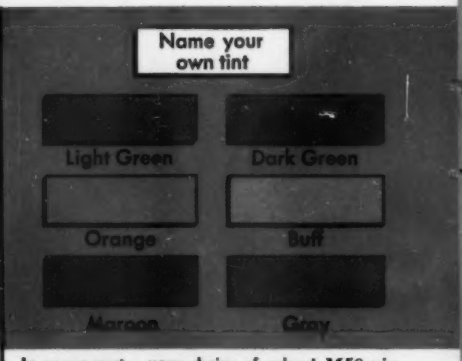
Why M50 Defense in Depth paints give you metal protection beyond all former concepts



In every coat...rust inhibition! Fused lead chromate is noted for rust-inhibition. The *M50* pigment particle structure permits paint makers to include large proportions of lead chromate in all coats of anti-corrosive systems.


2 M50 pigment alkyd primer coats
Exposed 9 yrs 45°S
Each coat 1.5 mils dry film
M50 pigment finish put on rusty steel
Exposed 4 yrs 45°S
3.0 mils
1.5 mils

In every coat . . . weather resistance! *M50* pigment is insoluble in water and has the excellent tint retention properties of fused lead chromate. Unlike other rust inhibitors, it actually boosts weather resistance of paints.



In every coat...your choice of colors! *M50* pigment gets along well with most tinting pigments, permits paint makers a wide range of colors...not only in intermediates and finishes but in primer coats as well. Colors stay true.

M50 Defense in Depth

National Lead Company,
111 Broadway, New York 6, N. Y.

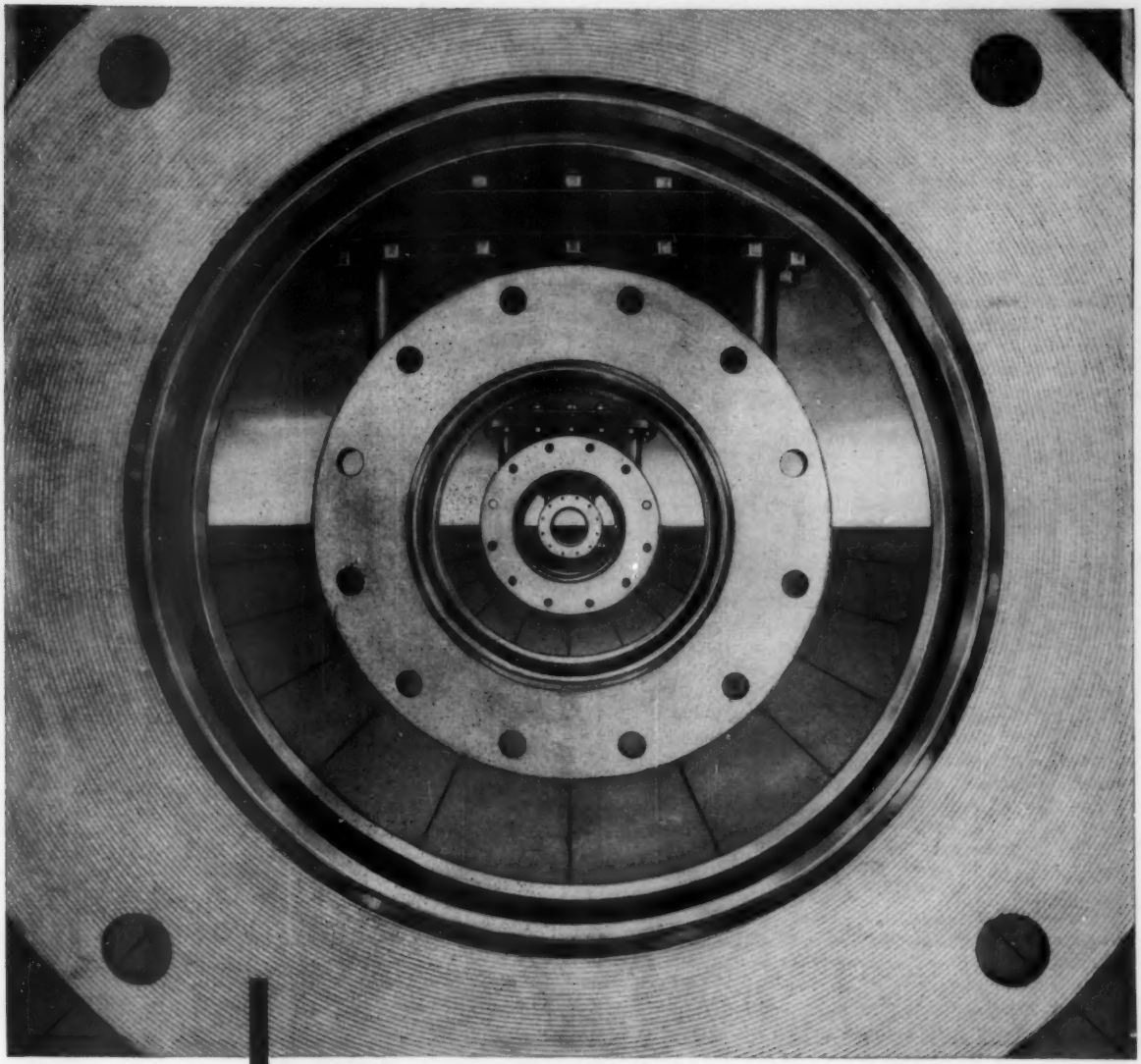
Gentlemen: Please send me your 24-page brochure, "Defense in Depth." Include color card of the six *M50* pigment paints you recommend for steel highway structures.

Name_____ Title_____

Firm or Dept._____

Address_____

City_____ State_____



Through these Gate Valves pass the best-regulated streams in the World!

The sound design and quality workmanship of Ludlow gate valves and Rensselaer gate valves is a guarantee of *lasting* ease of operation. Watertight closure is assured through years of trouble-free performance.

Write for the L&R Gate Valve Catalogs, showing the most complete selection of outstanding design features available today. Ludlow and Rensselaer double disc gate valves meet all requirements, including A.W.W.A. specifications, in sizes from 2" to 72", plus custom designing for special applications.

LUDLOW & RENSSELAER

VALVES AND HYDRANTS

THE LUDLOW VALVE MANUFACTURING CO., INC., TROY, N. Y. – SINCE 1861

Solid Waste Code of New Jersey

In its effort to provide better refuse collection and disposal practices throughout the state, the New Jersey State Department of Health has adopted the following solid waste code:

Section 1—Definitions

1.1 Definitions—The following terms used in this code and ordinance shall mean and include:

(A) Refuse: Garbage, combustible and/or noncombustible waste solids.

(B) Garbage: Animal and/or vegetable waste solids resulting from the handling, preparation, cooking and/or consumption of foods.

(C) Combustible Waste: Yard trimmings, rags, waste wood or cardboard and other combustible waste solids of a non-volatile or explosive nature.

(D) Noncombustible Waste: All solid waste material which does not burn.

Section 2—Refuse Receptacles

2.1 The owner, agent, lessee, tenant or occupant of every dwelling or other premises where refuse accumulates shall provide and keep on such premises sufficient and suitable receptacles, with tight-fitting covers, for receiving and holding the aforesaid refuse.

(A) Sufficient is defined for the purposes of this section, to be at least one receptacle for each family unit or other occupant of premises and at least two such receptacles for each restaurant, market, store or similar business establishment where the aforesaid refuse shall accumulate.

(B) Suitable is defined for the purpose of this section, to be a watertight metal or plastic receptacle with a tight-fitting cover, so constructed as to prevent spilling or leakage of its contents. Each receptacle for use at a single residence shall have a capacity of not more than 30 gallons and be equipped with a pull handle or handles.

(C) Receptacles for refuse from multi-dwelling units or industrial premises may have a greater capacity than that prescribed in (B) hereof provided they are:

1. Watertight.
2. Constructed of metal or plastic.
3. Equipped for handling by motorized equipment.
4. Cleaned and sanitized as needed after emptying.
5. Replaced by the same type of receptacle if removed for emptying.

2.2 Receptacles that are badly broken or otherwise fail to meet the requirements of this section, may be classed as refuse and collected and disposed of as such by the person or agency responsible for the collection of refuse.

2.3 Receptacles of refuse shall not be set out for collection except during the hours of the day or days scheduled for the collection of refuse, or the evening before.

2.4 Receptacles shall be conveniently located on premises for storage of refuse and maintained in such manner as to prevent creation of a nuisance or menace to public health.

Section 3—Preparation of Refuse for Collection

3.1 Garbage shall be thoroughly and completely drained of all liquids, wrapped securely in paper and placed in a receptacle as described in Section 2 hereof.

3.2 Noncombustible waste shall not be mixed with other refuse when prepared for disposal by incineration.

3.3 Paper shall be secured and properly tied into bundles, or other packages in a manner to prevent any scattering while awaiting or during collection. The bundles or packages shall be of a size and weight to permit ease of handling by one man.

3.4 Combustible waste shall be stored and held in receptacles separate and apart from noncombustible waste when prepared for disposal by incineration.

3.5 Combustible or noncombustible waste of such a nature that it cannot be deposited in a receptacle shall be securely and properly tied into bundles or packages to prevent spilling or scattering. The bundles or packages shall be of a size and weight to permit ease of handling by one man.

3.6 Refuse prepared for collection should be packaged or otherwise assembled in quantities weighing not more than 50 pounds.

Section 4—Business Establishments

4.1 The owner, agent, lessee, tenant, or occupant of any premises whereon a business or industry is conducted shall arrange for the removal of refuse from such business or industry each day, unless sufficient and suitable facilities are provided and used for storage of such refuse until removal of the refuse from the premises.

Section 5—Refuse Disposal

5.1 Refuse shall be disposed of only through use of sanitary landfills established, conducted, operated and maintained in accordance with standards established by the State Department of Health

—and/or—

incinerators constructed, operated and maintained in accordance with standards established by the State Department of Health, and code or regulation of the New Jersey Air Pollution Control Commission or other methods of disposal as may be permitted by code or regulation of that Commission.

Section 6—Permits; Vehicles

6.1 The business of refuse collection shall not be conducted in any manner on any public or private place, street or other premises without a permit therefore having been issued by the board of health.

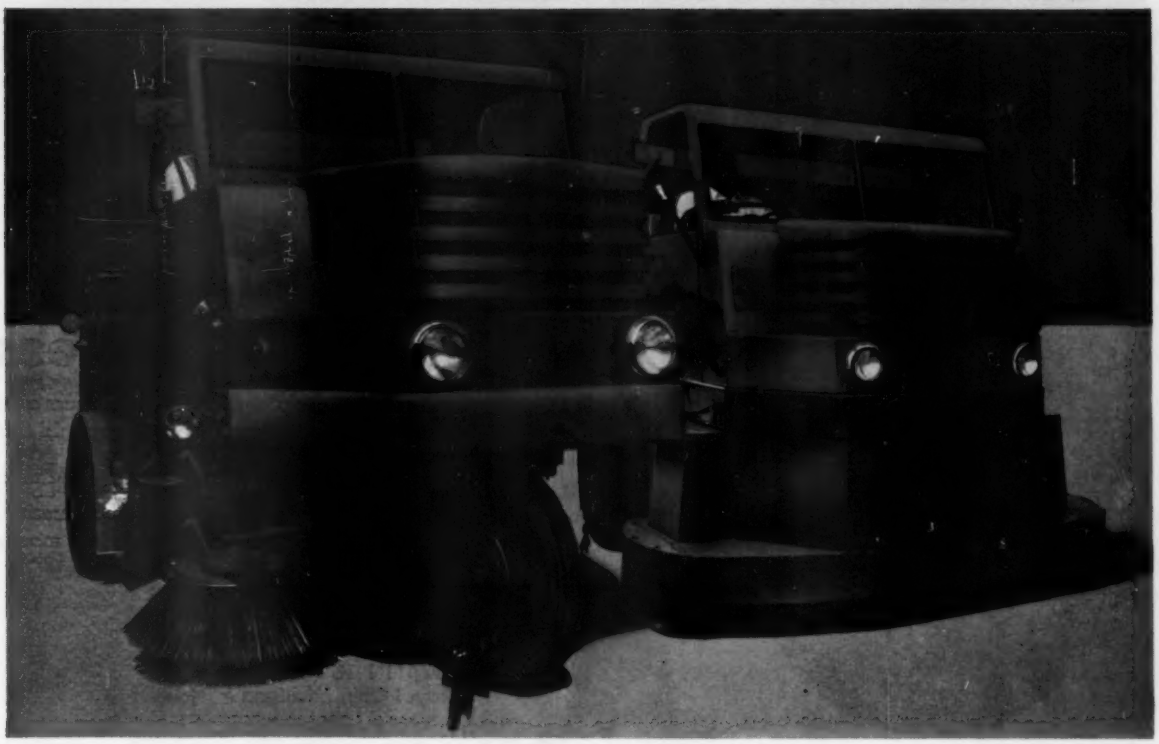
6.2 Vehicles used for the purpose of collecting refuse from receptacles as prescribed by the provisions of this code shall be loaded in such fashion that no part of the contents shall fall, leak or spill therefrom. Each such vehicle shall be adequately and tightly covered as may be directed by the board of health.

Section 7—Nuisance Defined

7.1 The storage, collection or disposal of refuse in violation of any provision of Sections 2, 3, 4 or 5 of this code is hereby declared to be a nuisance and detrimental to public health.

Communities within the state may adopt this code by reference—or may adopt any part of it by reference as long as substitute sections or paragraphs are not added.

FOR ALL CITIES—ALL BUDGETS
NEW 2 YARD SWEEPERS FROM WAYNE



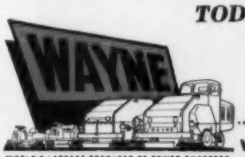
Now—more than ever before—Wayne matches the machine to the job and puts the economy of mechanical sweeping within the reach of every city of every size.

Take a look at these 2 new Waynes. Then consider this: these 2 yard sweepers are capable of handling the entire street cleaning program of smaller cities—doing a better job, for less. In larger cities, they supplement the big 3 yard and 4 yard capacity Waynes—are ideal for narrow streets, alleys, parking areas—freeing bigger capacity sweepers for other work.

The same famous Wayne features of ruggedness—maneuverability—power—largest effective hopper capacity—are all built into these new Model 200 Waynes to keep your streets sparkling clean for pennies per mile. *Two* models—the 200-W water spray dust control model, and the 200-V with powerful vacuum dust control for extreme dust conditions—fit into the Wayne line for every sweeping need.

Pomona • Chicago • Newark • Export: Henry R. Jahn & Sons, Inc., New York City

Write for the NEW WAYNE SWEEPER facts—TODAY!



WORLD'S LARGEST PRODUCER OF POWER SWEEPERS SOLD AND SERVICED EVERYWHERE

Wayne Manufacturing Co.
2433 E. Lexington Ave.,
Pomona, Calif.

Show me a Wayne in action. ☐
Send me descriptive literature. ☐

Name_____ Title_____

Firm_____

Address_____

City_____ Zone____ State_____

H. W. Kizer of Kizer Bros., Ft. Worth, Texas, rents diggers for many different applications. He says, "I wouldn't consider using another digger even if it costs several hundred dollars less."

S. J. Turk, operator of a Sherman for Detroit Edison Co., reports that this unit recently completed in 15 minutes a job that used to take four hours by hand.

The Low Cost SHERMAN BOBCAT

rugged and agile with a history of success

Hundreds of Sherman "C" Diggers have proved their ruggedness over the years. Now the "C"s successor, the Bobcat, is ready to uphold this outstanding reputation.

Read what a few Sherman owners have to say about their diggers. Drop us a line today for information on an on-the-job demonstration. See for yourself why this *low cost* unit is the best digger for the money you've ever seen. Write today for Bulletin No. 1082.

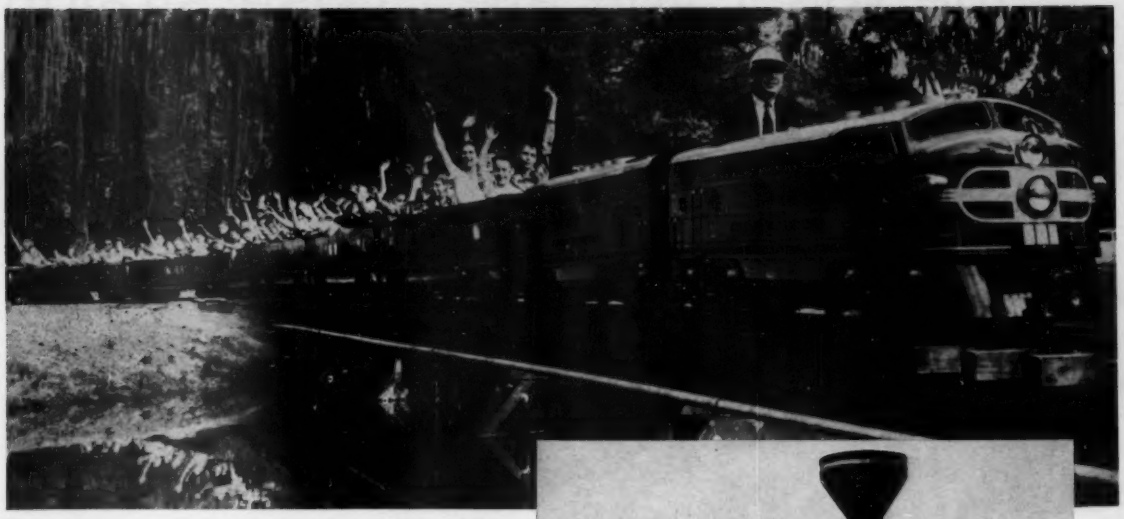
Sherman Products

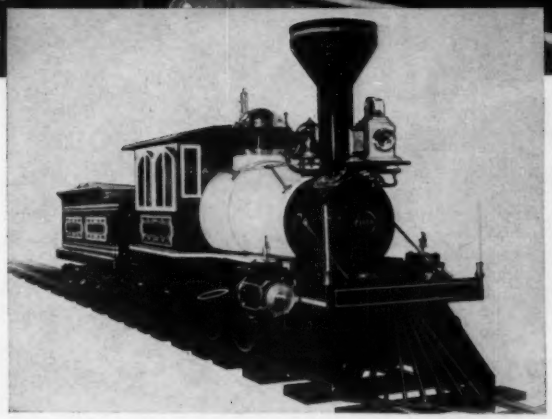
SHERMAN PRODUCTS, INC.
Royal Oak, Michigan

POWER DIGGERS • LOADERS • FORK LIFTS
SOIL WORKING TOOLS • CRANES AND EXCAVATORS

James P. McDonough of the Kevin Co., Baltimore, Maryland building contractors, is completely sold on the economy of the Sherman Power Digger. The Kevin Co. uses the Sherman to dig footings for as many as ten houses a day.

M. T. Witten of Costa Mesa, Cal. says, "I like its ease of handling. But just as important is its speed." He digs 10 x 10 x 6 ft. basements in just 40 minutes.





Trains depart on schedule (above) from the Audubon Zoo station in New Orleans Municipal Park and treat passengers to a pleasant view of Spanish moss and cool waters. This model (right) of a century-old wood-burner can now be seen chugging through the New Orleans park and other parks throughout the country.

Railroads Stage Comeback

Not all of the country's railroads are struggling to cut passenger service. A pint-sized version of the iron horse is holding its own. In fact, for the little scenic railways that wind their way through the greenery and over the waters of American parks, business is booming.

Parks in Ft. Worth, Texas, Bangor, Pa., Pine Mountain, Ga., Rye, N. Y., Tampa, Fla., and New Orleans, La. have recently installed new miniature trains for the pleasure of their younger patrons.

The two trains in Tampa's Lowry Park Fairyland and Zoo will carry their passengers through a 10-acre make-believe jungle filled with uncaged kangaroo, buffalo, deer, ostriches, peacocks, wild turkeys and other animals. Trains enter and leave the enclosed area through radio-controlled gates.

New Orlean's Audubon Municipal Park, which has had two diesel-type trains for a year, added an authentic reproduction of railroad equipment of the year 1865. The locomotive is a gasoline-powered steam-type unit incorporating a flaring smoke stack, oversize engineer's cab and pointed cowcatcher.

These childhood delights are made by the Allan Herschell Company of North Tonawanda, N. Y.

Sludge Builds Park Topsoil

New York City disposes of approximately 100,000 dry tons of digested sludge annually and as much as 10% of it is used to produce synthetic topsoil for parks located in four of its five boroughs.

With 12 sewage purification plants operating, the great bulk of dried sludge from six of them is being used for existing and proposed park areas in this soil building program.

Originally, a study and report by the late Clarence C. Combs, landscape architect and soil agronomist, sparked a cooperative experiment by the city's Department of Public Works and its Park Department. It was found that sludge, mixed with sand fill on completed landfill areas, produced satisfactory green cover at a fraction of the cost of imported topsoil.

About 1,700 acres of park area being developed will be covered with the synthetic topsoil produced from digested sludge. It is estimated that more than a million cubic yards of the material will be required to fill the needs of the city during the next few years, a topsoil yardage that is not available inside the city limits or within economic hauling distance of it.

The balance of the sludge produced at the New York City plants is pumped aboard five diesel-operated, sea-going vessels and dumped more than 12 miles out at sea.

The steeper your hills...

the wiser you are to use straight Sterling Rock Salt for ice control

Sand and cinders just don't melt snow—have no effect on ice, sleet or freezing rain! That's why it's especially important to use straight Sterling Rock Salt on your hills. Sterling Rock Salt has melting power: to give you bare pavements, the *only* safe pavements during winter storms. For hills, it's sound practice to double the quantity of Sterling Rock Salt normally applied to flat stretches of road. This provides the extra traction and extra melting power needed.

STERLING "AUGER-ACTION" **ROCK SALT**
INTERNATIONAL SALT COMPANY, INC.

International Salt Co., Scranton, Pa. • Baltimore • Boston
Buffalo • Chicago • Cincinnati • Cleveland • Detroit • Newark
New York City • Phila. • Pittsburgh • Richmond • St. Louis

Ahoskie, N. C. makes sure that all streets are swept at least once a week. Business area streets are cleaned seven times a week.

Children Named This Street Sweeper

Ahoskie, N. C. developed public interest in its street sweeping program by holding a contest to name the mechanical street sweeper. Although restricted to elementary school children in grades one to six inclusive, adults were well aware of the contest.

The winning name "The Litter Getter" is painted on both sides of the machine. It was submitted by a second grade boy. He was rewarded with a living prize—a pedigreed cocker spaniel pup. A group of civic leaders judged some 2,400 entries.

Using a Wayne sweeper, Ahoskie sweeps its residential streets five days a week. Business district streets are swept six days a week, plus a seventh sweeping at midnight Saturday. A small hand crew helps out on this nocturnal sweepdown to clean the sidewalks in advance of the sweeper.

Parking Restrictions Help Snow Control

At Hibbing, Minn. we know that snow will come every winter, some winters more than others. Along with the snow (an average of 47.6 inches over the last 22 years) we must also contend with extremely cold temperatures. Last winter was especially bad, with around 20 degrees below zero prevailing for weeks at a time.

To help the snow removal problem, we enforce the calendar parking system in the residential section. That is, parking on the odd numbered side of the street on the odd calendar day and even side on the the even calendar day. This gives us a chance to plow one side of the street each day or night. In between storms we haul snow from the residential areas by windrowing it to the center of the street and picking it up with a TU3 Sno-Go mounted on a 6-SU diesel powered F.W.D. We feel that hauling snow away lessens the water problem in spring.

From November 1 to April 1 no parking is allowed in the business district between the hours of 1:00 A.M. to 7:00 A.M. After a storm our four graders go out at midnight and windrow the snow to the center of the street. Three D-2 Caterpillars work ahead of the graders clearing off the sidewalks. The windrow is removed as soon as possible but it still allows cars to move on each side and park as usual.

Gas stations and private parking lots must push their snow into piles on their property—not into the street. They must haul it to the snow dump themselves—or wait until we get time. Then we use our Hough Payloader to load it into trucks for removal.

Another problem we experience is ice in the gutters. Unless this ice is removed, drainage in the spring becomes a problem. Each year winter seems to start with a rain that turns to snow and then freezes. When the rain starts and the temperature drops we salt the gutters quite heavily in the business district. On the first plowing the road patrols are usually able to remove the frozen snow and from then on, if the temperature remains well below freezing and it usually does, we are able to keep the gutters clean.

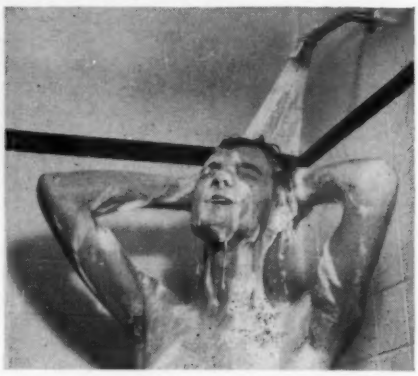
To keep our 85 miles of streets and about 25 miles of alleys open to traffic we have, in addition to that already mentioned, the following equipment: eight dump trucks, one 4-ton truck with plow, two truck sanding machines and a V-plow for the front end loader. As in other cities, we concentrate on opening up the business district and key arteries first.

J. H. Rough
Village Engineer
Hibbing, Minn.

Between plowings, street department crews remove snow from residential areas to reduce spring water problems.

BASIC...

A BATH WAS AN OCCASION in Grandfather's day. Setting up the tub, heating bucketfuls of water was a chore even the fussiest usually confined to one day a week—Saturday night.



EVERYDAY IS SATURDAY TODAY. With clean, pure water... carried through cast iron pipe... the shower or bath today is an accepted part of American living.

U.S. cast iron **PIPE**

FOR WATER, SEWERAGE AND

U. S. PIPE AND FOUNDRY COMPANY

but better than ever today!

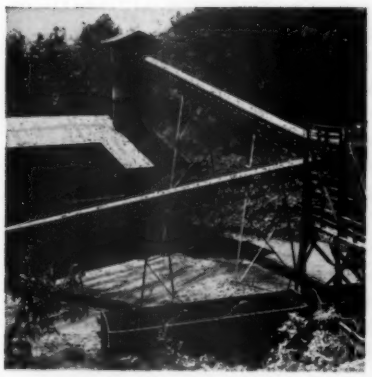
Mine-to-main control assures
U. S. Pipe quality in service

Water, harnessed and put to work, is the firmest base on which a community can build.

Water officials are doing an outstanding job keeping the nation's water pitcher filled. Cast iron pipe is their most dependable ally.

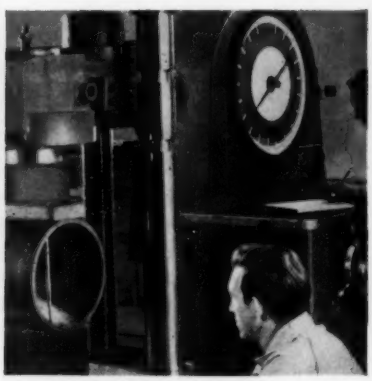
To furnish that dependability . . . in every detail . . . U. S. Pipe controls production every step of the way. From mine to final shipping U. S. cast iron pipe is subjected to intensive quality checks. . . checks to provide long life, efficiency, trouble-free service.

Quality is built into U. S. cast iron pipe.



CLEANING ORE. U. S. Pipe ore cleaning plant at a mine where ore is crushed and passed through separators to float off impurities.

MOLTEN IRON in a measured amount is poured into a machine ladle, preparatory to the start of the centrifugal casting cycle.



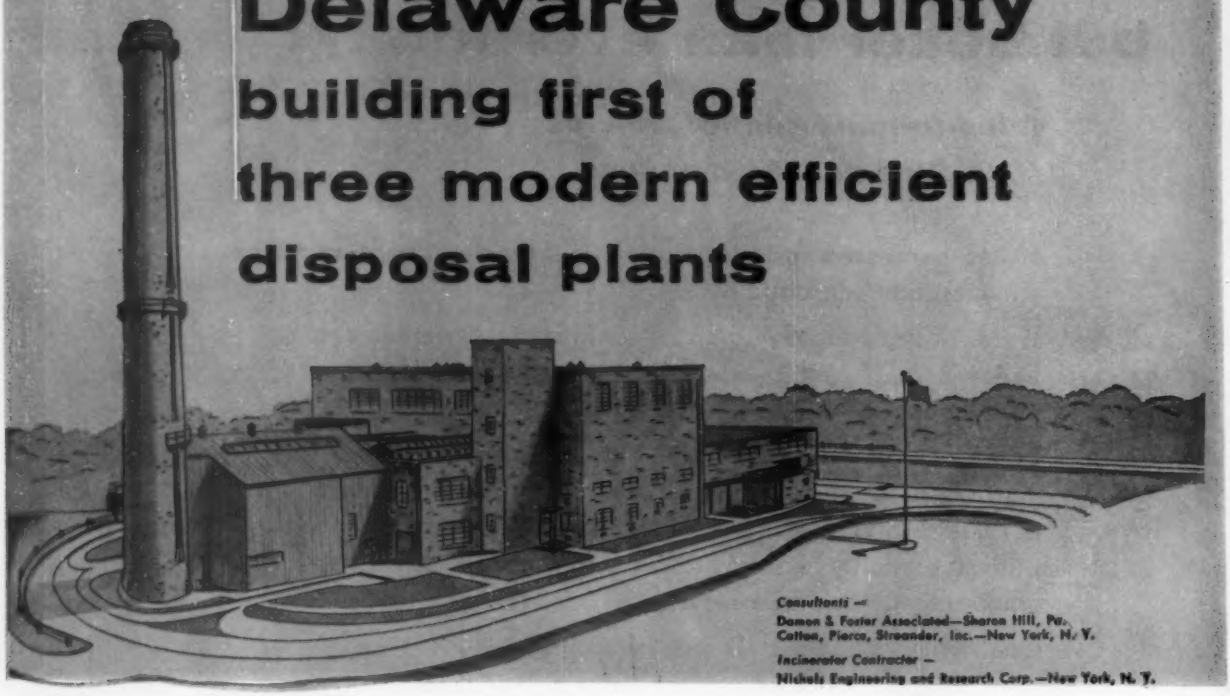
VIGILANCE. Specimens of U.S. Pipe are periodically subjected to a ring crushing test in a 200,000 pound universal testing machine.

INDUSTRIAL SERVICE CAST IRON

Birmingham 2, Ala. *A wholly integrated producer from mines and blast furnaces to finished pipe.*

a BETTER answer to municipal REFUSE problems

Delaware County building first of three modern efficient disposal plants



Consultants —
Damon & Foster Associated—Sharon Hill, Pa.
Catton, Pierce, Strosnider, Inc.—New York, N. Y.

Incinerator Contractor —
Nichols Engineering and Research Corp.—New York, N. Y.

Taking advantage of the economies inherent in wide-scale cooperative planning, Delaware County, Pa., is effectively solving a refuse disposal problem by developing a highly efficient 3-plant disposal system, each plant having a capacity of 500 tons per day. The first of these plants, now under construction, will have all the important advantages of continuous operation — through the use of C-E Incinerator Stokers. Two 250-ton capacity C-E Stoker Systems have recently been ordered. Each is equipped with an inclined "drying" stoker and a horizontal "burning" stoker, both of the traveling grate type as shown on the opposite page.

Delaware County's choice of "continuous processing" over the widely used "batch processing" is a matter of sound economics, since every C-E Stoker System installed to date has service-proved its labor-saving and reliability attributes. Delaware County's next door neighbor, the city of Philadelphia, has selected the C-E System for its Northwest Incinerator Plant after intensive study of the subject. Four large plants in the City of New York use the C-E Stoker System with outstanding success.

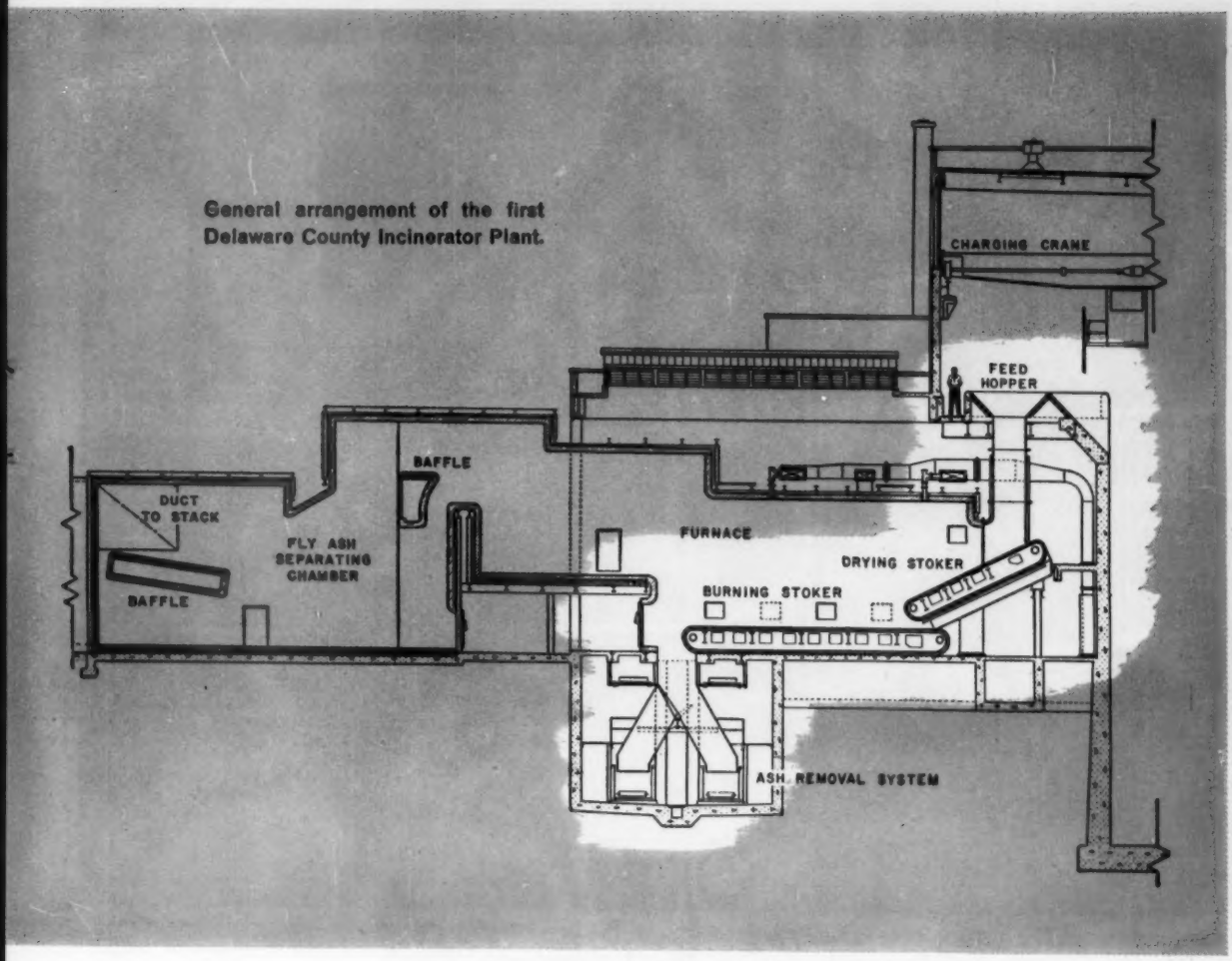
Decontaminated refuse, as it is discharged from the C-E Incinerator Stoker, provides a sanitary, inoffensive fill for reclamation of waste land.

In some instances it may be found desirable to combine the refuse disposal plant with a C-E Raymond Flash Dryer System for sewage sludge disposal. Heat generated from the burning of refuse becomes a convenient cost-free medium for drying sewage sludge prior to its incineration, or recovery as a soil conditioning fertilizer.

The C-E Incinerator Stoker is designed to handle all types of combustible refuse in quantities ranging upward from 50 tons per 24-hour day.

For further information, please contact the Combustion office in your city, or write directly to Combustion Engineering, Inc., 200 Madison Avenue, New York 16, N. Y.

ALL TYPES OF STEAM GENERATING, FUEL BURNING AND RELATED EQUIPMENT; NUCLEAR REACTORS;



General arrangement of the first Delaware County Incinerator Plant.

ADVANTAGES OF C-E STOKER SYSTEM

- Large hopper and chute provide sealed, continuous supply of refuse.
- Feed of refuse is unobstructed, nonclogging.
- Advance of fuel bed from front to rear is positive, continuous.
- Supply of air to fuel-bed is zone-controlled.
- Residue is discharged continuously from grate surface.
- Operation is easy — no heavy stoking or cleaning of fires.
- Chrome cast iron — most suitable material — is used for grate surface.
- Wide keys over driving chains prevent fouling.
- Grate elements are easily replaceable.
- Steel driving chains take all tension.
- Take-up mechanism is easily accessible at front.
- Maximum availability is assured.
- Stokers are applicable to largest incinerators.
- Less labor is required than with any other burning method.

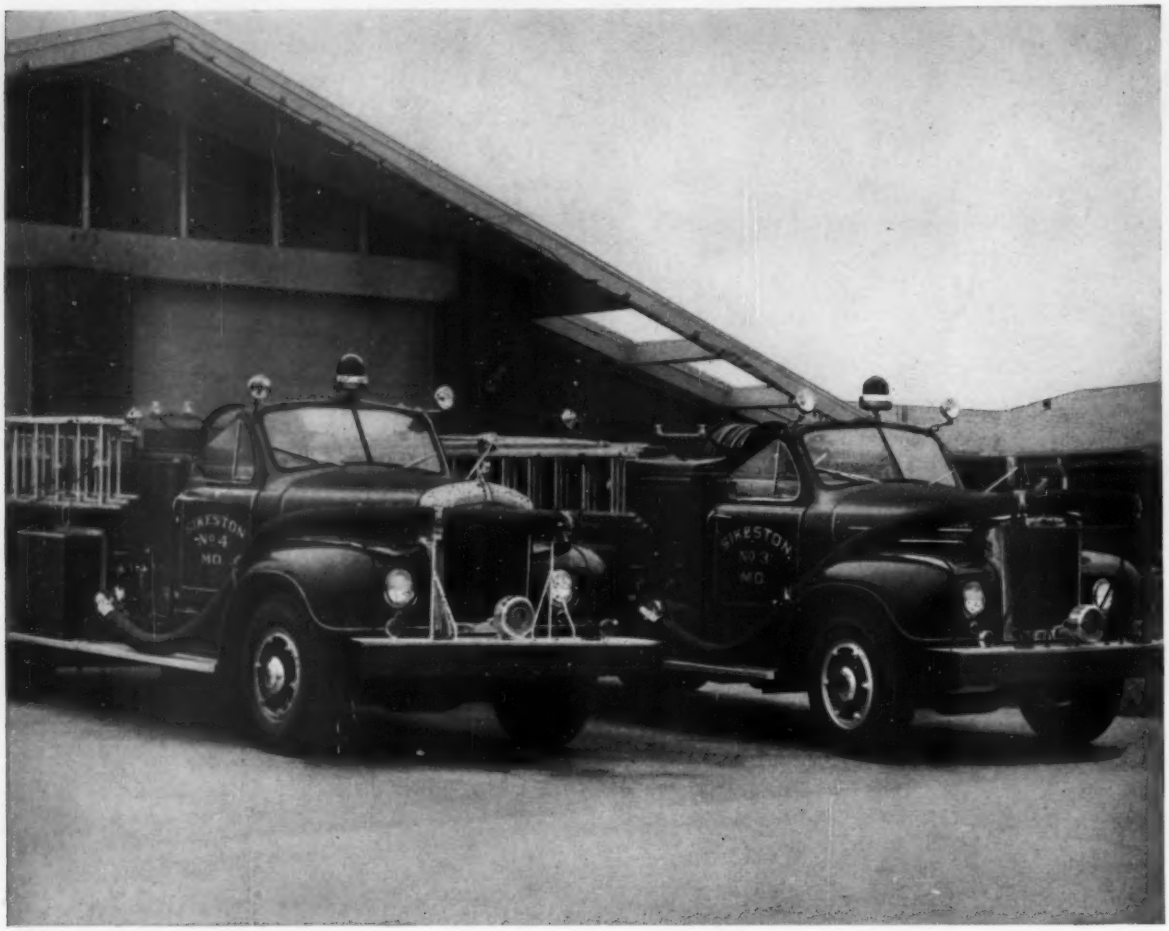
COMBUSTION ENGINEERING

C-232

Combustion Engineering Building • 200 Madison Avenue, New York 16, N. Y.

CANADA: Combustion Engineering-Superheater Ltd.

PAPER MILL EQUIPMENT; PULVERIZERS; FLASH DRYING SYSTEMS; PRESSURE VESSELS; SOIL PIPE



with these new triple-combination Mack pumpers

Sikeston rates with the best

With the addition of two Mack pumpers in 1957 and 1959, Sikeston, Missouri, is as fully equipped and as efficiently manned as any comparable-size city between St. Louis and Memphis. And it's proud of it!

Rated at 750 gpm, one unit carries a 300-gallon booster tank, the other a 500-gallon tank. Otherwise, specifications are identical. Each carries 1700 feet 2½" hose, 500 feet 1½" hose, 200 feet 1" hose, and squirrel-tail suction. Each is equipped with a 14-foot roof ladder, a 24-foot and a 35-foot extension ladder. The pumpers are powered with the famous Mack Thermodyne® engines—with more pumping power . . . more *performance* power . . . than any others in their class.

Considering what Mack has to offer in custom-built apparatus of the finest quality . . . it's short-sighted to settle for anything less. Mack now fields a wide range of cab-forward and standard units . . . offers a choice of engines . . . offers conventional or automatic transmissions . . . offers standard, two-stage pump or the new Uni-Control Hi-Stage pump . . . comes with air or hydraulic braking systems . . . gives you the gear ratios and built-in extras you need.

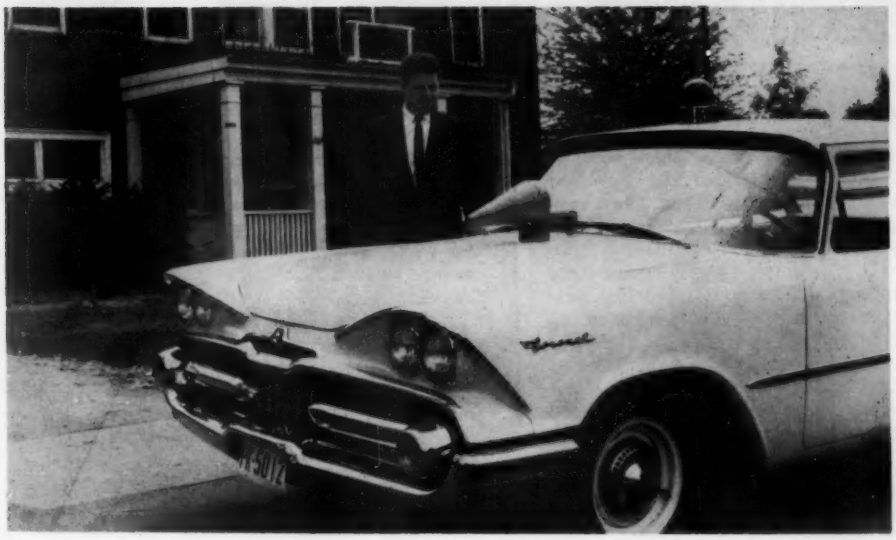
Ask Mack to show you how Mack is best equipped to supply the equipment that's *right*—in design and performance both. Mack Fire Apparatus, Allentown, Pennsylvania. In Canada: Mack Trucks of Canada, Ltd.

7226

MACK
FIRST NAME FOR
FIRE APPARATUS

COMPLETE LINE OF PUMPERS—500 to 1250 GPM . . . SQUAD AND HOSE WAGONS . . . AERIALS 65′ TO 144′ . . . COMBINATION LADDER TRUCKS

PUBLIC SAFETY



Chief of Police John G. McNamara, Cheshire, Conn. examines the machine gun equipment.

Police Cars Equipped With Machine Guns

A 32-round electric machine gun designed to stop a fleeing desperado's car with a well placed shot is available for mounting on the hood of a police car. It is basically a 12-inch barrel revolver using the .357 Magnum cartridge, available in either standard or armor-piercing types, although the standard .38 caliber ammunition which is used by most police organizations can be used interchangeably with the .357 cartridges.

The armor-piercing bullets, at a 200 yard range, will go completely through an automobile body, damaging the engine. At shorter distances, the bullet will penetrate the entire engine block.

Since a great many of the country's police organizations use the Dodge pursuit car, C. A. Stockholm, owner of the Electric Gun Co. of Beaumont, Tex., in introducing the new weapon, purchased one of these cars to use as a demonstrator. His car is a duplicate of the California Highway Patrol cars. It will be loaned for try-out to various police units interested in the gun.

At 60 mph, Stockholm states he can put all 32 bullets into an 18-inch circle on a target 200 yards away. At 110 mph, a rectangle eight inches wide and 14 inches high will cover all the shots at 200 yards.

One-Man One-Shot Operation

When it becomes necessary for a police officer to fire on a fleeing automobile, the officer has to lower his door glass, remove his revolver from the holster which is generally on his right hip, place the revolver in his left hand and fire out of the window. While in pursuit of a car at high speeds the officer has to keep his eyes on the road, the car he is chasing and to aim his gun at the same time. His chances of placing a shot in a vital spot are remote. Since most people are right handed, to fire with his left hand is not a natural operation.

With the Electric Machine Gun mounted on the hood of a car and triggered from inside, the officer never takes his eyes off the subject. He places his right hand on a simulated pistol mounted on the dash and pulls the trigger.

The gun was demonstrated before 250 chiefs at the 65th convention of the International Association of Chiefs of Police at Miami Beach, October 26-31. Equal interest has been expressed by sheriffs and some have placed orders.

Fire Protection In Alameda County

Alameda County areas lying outside Oakland are protected from fire by full-time paid fire companies, volunteer companies and private fire department organizations financed by local improvement associations. The only coordination is through the Civil Defense organization.

The sheriff's system is tied in with radio systems of separate radio frequencies for the fire departments. The Sheriff's System is tied in with radio systems of other counties.

The fire departments will respond to any mutual aid call of any jurisdiction. They will not respond to a first alarm call within another jurisdiction unless that agency's equipment is in use. All agencies, including Oakland, have signed mutual aid agreements.

EARL R. STRATHMAN
County Administrator
Alameda County
Oakland, Calif.

Phoenix's In-Service Training Program

When Mayor Jack Williams addressed the graduates of Phoenix's in-service training program, he paid tribute to the city's most extensive accomplishment in this activity. Nearly 750 employees received nearly 1750 certificates. They took part in 74 certified training programs and 11 non-certified.

Of the total, 70 employees completed courses in municipal administration and 380 enrolled in courses on supervision. The city utilized principally the Institute of Training, International City Managers' Association in this educational work. Other areas of training covered included:

Police and Fire Science
Tabulating Equipment Methods
Safety
Library Science
First Aid
Personnel Methods and Techniques
Report and Letter Writing
Construction Inspection
Engineering Inspections
Equipment Operation
Welding
Custodial Methods
Sewage Treatment
Water Filtration

Each graduate received a certificate that he had completed in a satisfactory manner the required course of study. A sample copy of the certificate, together with other information about the recent graduation, can be obtained from Leroy J. Brenneman, Personnel Director, City Hall, Phoenix.

Movie Made of City's Annual Report

A new motion picture depicting the operation of the City of Philadelphia, its progress and its problems, has been released for group viewing, it has been announced by City Representative Frederick R. Mann.

It is a film version of "The Road Ahead; Milestone 3," the City's popular annual report distributed with Philadelphia newspapers last April. Prints of the 12-minute, 16-mm black and white sound film may be borrowed by civic groups. Address requests to the office of the City Representative, Room 201, City Hall, or MUnicipal 6-9700, extension 943.

Air Pollution Control Notes

Control Agencies Merge

The enforcement of air pollution control laws in the Pittsburgh area, previously divided between two agencies, one covering the city itself and the other covering Allegheny County outside of Pittsburgh, has been merged into the county health department, with Lee Schreibeis as director. The entire personnel of the former county group, headed for ten years by Thomas Wurts, has been incorporated into the new over-all agency.

GM Has Exhaust Purifier

General Motors has undertaken an engineering development and testing program on a catalytic "purifier" that its developer, Eugene J. Houdry, claims will eliminate 90 per cent of all harmful material contained in automobile exhaust fumes. General Motors has been licensed by Oxy-Catalyst, Inc., the firm headed by Houdry, to manufacture and sell the device, an early version of which it tested for more than 12 months.

Meanwhile, the need for devices which will reduce or eliminate air pollution resulting from the operation of automotive vehicles was stressed by United States Surgeon General Leroy E. Burney. Addressing the Society of Automotive Engineers in Detroit, Mr. Burney questioned whether the $1,000,000 being spent a year by the automotive industry for research on this problem is enough. He pointed out that the cost to the country of air pollution from all sources is estimated at more than $7½ billion a year.

Rockefeller Appoints

Governor Nelson A. Rockefeller of New York has reappointed Jerome Wilkenfeld of Niagara Falls as the industry member of the New York State Board of Air Pollution Control.

Air Pollution and Cancer

In a recent study of post mortem records of the Philadelphia Zoological Gardens, Dr. Ernest J. Witte, chief veterinarian of the Pennsylvania Health Department, noted that the increase in lung cancer gives rise to speculation on the role of the increasing amounts of carcinogenic chemicals in the air as a result of increased industrialization. "The high frequency of lung cancer in the Anseriformes (ducks, geese, swans) in the past ten years would seem to emphasize the importance of air contamination, since these species are kept in outdoor pens throughout the year."

L.A. Appointments

A recent change in the top personnel of the Los Angeles Air Pollution Control District finds Captain Louis Fuller now chief deputy air pollution officer; Arthur Atkisson as assistant chief deputy; Lloyd H. McEwan, enforcement chief, and Robert Barsky, public information officer.

N. J. Extends Deadline

New Jersey again has delayed its deadline for the elimination of the state's open garbage dumps. The legislature passed a bill which extends the deadline for adoption of landfill or garbage disposal methods to June 30, 1960. The deadline had already been pushed back once before. Several years ago the state Department of Health called for more sanitary disposal methods. Some of the legislators indicated that this would be the last time they would vote for a delay. Said one: "How can we expect industry to be serious about taking any air pollution control measures when we permit open dump burning which is a prime cause of foul air?"

Top performance, high efficiency and less maintenance are factors which influence the selection of a short coupled pump. Layne Vertical Service Pumps fulfill these requirements and offer the advantages of lower installation and operation costs, low submergence requirements, simple alignment, no priming and less floor space demands. For any short coupled pumping job . . . specify Layne.

Write For Free Bulletins:
LAYNE TURBINE TYPE SERVICE PUMPS—NO. 300
LAYNE PROPELLER AND MIXED FLOW PUMPS—NO. 350

World's Largest Layne Water Developers

LAYNE & BOWLER, INC., MEMPHIS
General Offices and Factory, Memphis 8, Tenn.
LAYNE ASSOCIATE COMPANIES THROUGHOUT THE WORLD
SALES REPRESENTATIVES IN MAJOR CITIES

Typical Councilman Has Ten Hats

The typical city councilman wears about 10 different "hats" on his job, Arthur W. Bromage, professor of political science and specialist on the problems of local government, declared recently at the University of Michigan's Institute for Mayors and Councilmen. The Institute is sponsored by the Institute of Public Administration, University Extension Service and the Michigan Municipal League.

The ten roles that a Councilman must play confidently and expertly include:

1. *Legislator.*—He must regulate property by zoning and control the individual by ordinance.

2. *Financier.*—Although in most municipal governments, the finance officer prepares the budget, the councilman makes the final decision. He must tell the people that municipal government is a bargain when compared with the price of rampant crime, death by fire, spread of disease and juvenile delinquency.

3. *Employer.*—The councilman is responsible for all employees of a city. He must see that they are adequately paid, provided with decent working conditions and fringe benefits.

4. *Constructive Critic.*—Administrators aren't perfect; they can get in a bureaucratic rut. When this happens it is up to the councilman to bring complaints to high administrative officers who can work out the problem with him.

5. *Buyer.*—The councilman, who is probably one of the biggest buyers in our society, is dependent upon the administrators in this function. Requests for equipment, for example, must be in such a form that the councilman can see that the city gets the best value possible.

6. *Administrator.*—The councilman is not always the policy maker; sometimes he has to decide on certain matters such as the issuance of licenses.

7. *Intergovernmental Policy Expert.*—The councilman has to decide, for example, whether to sell water services to fringe areas. He also is asked to appear before the state governing bodies to represent his city's viewpoint and to make policy which determines the relation of the city to the federal government.

8. *Public Relations Man.*—"Don't wait until a problem arises and then douse the fire with water," the professor advised. "Have a positive program and try to foresee problems before they become critical."

9. *Fundamental Law Man.*—It is the councilman's business to recommend charter amendments if the old charter creates a serious problem and binds the city's progress.

10. *General All-Purpose.*—This includes all of his other duties, such as attending ceremonial functions, making speeches, reading and studying bills.

Is Your Town Like This?

Checklist on Need for Planning and Zoning

Highways leading into town are through slum areas or are lined with unsightly junkyards and are otherwise unattractive .....

Supposedly residential areas contain a mixture of industrial and business uses, thus discouraging good construction and keeping assessments low.....

The downtown area is characterized by some vacant buildings, gaps between buildings and a variety of building setbacks.....

The street system makes no provision for separation of through and local traffic.....

Parking in the downtown area is next to impossible.....

New subdivisions have streets uncoordinated with the town's existing pattern.....

Suitable industrial areas are not being protected and are being encroached upon by other developments .....

Children have to cross heavily traveled streets in going to and from school .....

Schools are overcrowded; are situated in the center of residential areas.....

New subdivisions are without water or sewers, and there is no immediate prospect of good service.....

There is no public open space suitable for a park, even though there is a lot of vacant land scattered throughout the town.....

Everybody complains taxes are too high, but nobody seems to know the reason why.....

Adapted by the Tennessee State Plannng Commission from a checklist in *Industrial Horizons.*

American City Editor To Judge ASCE Award

William S. Foster, editor of THE AMERICAN CITY, is one of eight editors of engineering magazines who will serve on the Jury of Judges to select the "Outstanding Civil Engineering Achievement of 1959" for the American Society of Civil Engineers.

The competition embraces all types of civil engineering projects, and is designed to make the general public more aware of the work of the civil engineer, and give credit for outstanding civil engineering skills.

Other editors comprising the initial jury are Hal Hunt, *Civil Engineering;* Henry Perez, *Construction Methods;* William Quirk, *Contractors and Engineers;* Waldo G. Bowman, *Engineering News-Record;* W. A. Hardenbergh, *Public Works;* Harold J. McKeever, *Roads and Streets;* James I. Ballard, *Western Construction.* Mr. Hunt will serve as chairman of the Jury.

Fulbright Fellowship In City Planning

Between now and October 30th of this year, interested candidates may apply for a planning and housing fellowship to the Technological University at Delft, The Netherlands. The fellowship, a Fulbright award for the 1960-61 term, includes an internship in the headquarters of the International Federation for Housing and Planning at The Hague, five miles from the university.

Professors at the university and the officers of the federation speak English but candidates should have a reading knowledge of French or German.

Both students and men already pursuing their professional careers may apply. Charles S. Ascher, Associate Director of the Institute of Public Administration, 684 Park Avenue, New York 21, New York, will supply candidates with further information.

For big power requirements

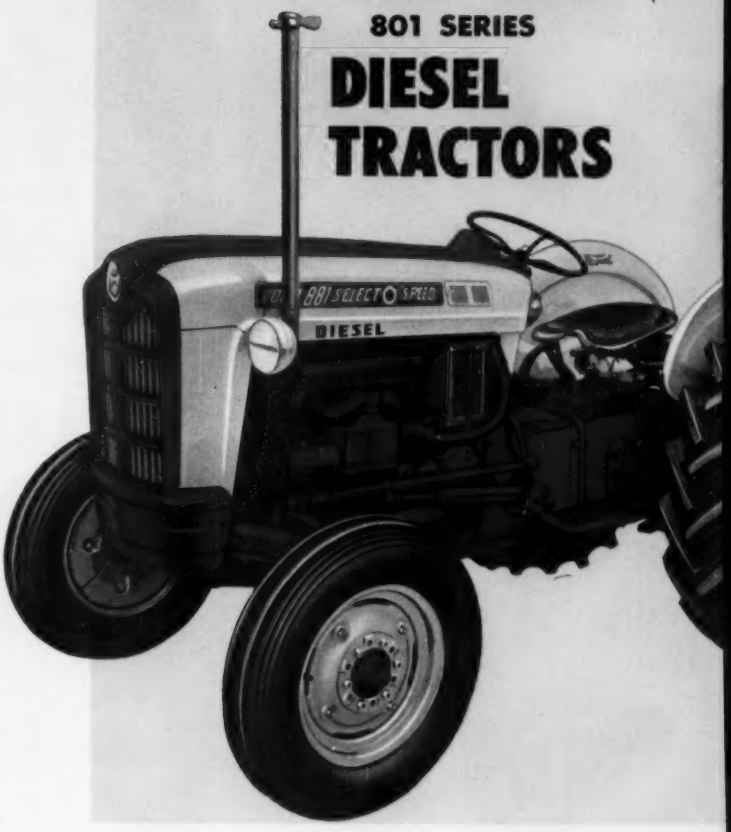
Extra lugging ability, fuel economy. Quick starts even in zero weather!

Max. corrected brake H.P. (less accessories @ 2200 rpm; manufacturer's rating) ..... 56 H.P.
Engine displacement ..... 172 cu. in.
Compression ratio ..... 16.8 to 1
Number of models 7
Transmission options ..... 4 or 10-speed "Select-O-Speed"
Heavy duty front end with industrial clutch ..... Optional
Available without hydraulic system and power take-off ..... Yes
Front tires ..... 6.00 x 16
Rear tires ..... 10 x 28, 11 x 28 and 12 x 28
Wheelbase at 52" front tread ..... 74.50"
Turning radius, brake locked (w/52" min. tread) ..... 8'11"
Overall height w/12" rear tires ..... 57.29"
Overall length at 52" front tread ..... 120.83"
Overall width at 52" tread ..... 63.88"
Overall width at 76" tread ..... 87.50"
Min. ground clearance (under transmission case) ..... 13.98"
Factory installed options include: Power steering, power adjusted wheels, auxiliary over-under transmission which provides 12 speeds forward when used with 4-speed transmission, and new "shift-on-the-go" Select-O-Speed.
Typical working weight with front and rear tire fill, front and rear wheel weights ..... 5617 lbs.

FORD

801 SERIES

DIESEL TRACTORS



all new...
all diesels...
all from
FORD...

TEAR OUT FOR HANDY REFERENCE

TEAR OUT FOR HANDY REFERENCE

For rock bottom original cost

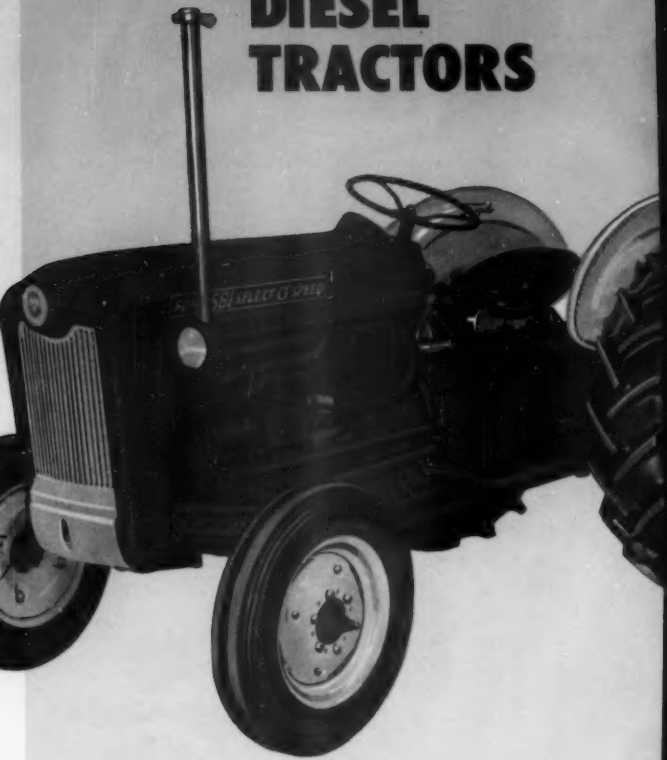
***Lowest* cost diesel tractors in their power class!**

Max. corrected brake H.P. (less accessories @ 2200 rpm; manufacturer's rating) ..... 41 H.P.
Engine displacement ..... 144 cu. in.
Number of models 8
Transmission options ..... 4 or 10-speed "Select-O-Speed"
Heavy duty front end with industrial clutch ..... Optional
Available without hydraulic system and power take-off ..... Yes
Front tires ..... 5.50 x 16 (6-ply 6.50 x 16 and 7.50 x 16 for HD front end)
Rear tires ..... 10 x 28 and 11 x 28
Wheelbase at 52" front tread ..... 74.50"
Turning radius, brake locked (w/52" min. tread) ..... 8'11"
Overall height w/11" rear tires ..... 56.15"
Overall length at 52" front tread ..... 120.83"
Overall width at 52" tread ..... 63.88"
Overall width at 76" tread ..... 87.50"
Min. ground clearance (under transmission case) ..... 13.22"
Factory installed options include: Power steering, power adjusted wheels, auxiliary over-under transmission which provides 12 speeds forward when used with 4-speed transmission, and new "shift-on-the-go" Select-O-Speed.
Typical working weight with front and rear tire fill, front and rear wheel weights ..... 4716 lbs.

FORD

601 SERIES

DIESEL TRACTORS



For economy, dependability on the big jobs

Gallon-an-hour fuel scrimper. Operates for pennies an hour, dimes a day!

Max. corrected brake H.P. (less accessories @ 1700 rpm; manufacturer's rating) ..... 54 H.P.
Engine displacement ..... 220 cu. in.
Number of models 4
Transmission ..... 6 speeds forward, 2 reverse
Available without hydraulic system ..... Yes
Front tires ..... 7.50 x 16
Rear tires ..... 12 x 38 and 14 x 30
Wheelbase ..... 80"
Turning radius, brake locked (w/58" min. tread) ..... 12'1"
Height to top of steering wheel ..... 63"
Overall length ..... 130.5"
Overall width, maximum ..... 85"
minimum ..... 65"
Min. ground clearance (drawbar) ..... 12.75"
Factory installed options include: Power steering, raised or "live" power take-off, automatic clutch release, belt pulley and horizontal muffler.
Typical working weight with front and rear tire fill, front and rear wheel weights ..... 7361 lbs.

FORDSON
POWER MAJOR DIESELS

And for peak productivity on industrial jobs

Direct injection fuel system with automatic timing for peak power, peak savings on fuel!

Max. corrected brake H.P. (less accessories @ 2200 rpm; manufacturer's rating).....56 H.P.
Engine displacement.....172 cu. in.
Number of models.....5
Transmission options.....4-speed, reversing, "Select-O-Speed"
Available without hydraulic system and power take-off.....Yes
Front tires.....7.50 x 16—8 ply
Rear tires....12 x 28, 13 x 24, 13 x 28 and 14 x 24
Wheelbase.....81.5″
Turning radius, brake locked (w/54″ min. tread).....9′6″
Overall height (14 x 24 rear tires).....57.72″
Overall length (14 x 24 rear tires).....128″
Overall width (14 x 24 rear tires).....71.38″
Factory installed options include: Equipment Hydraulic Package, 28″ cast iron rear wheels (1200 lbs.), and the new "shift-on-the-go" Select-O-Speed.
Weight with 28″ tires.....3800 lbs.
Weight with 28″ tires and cast wheels 5000 lbs.

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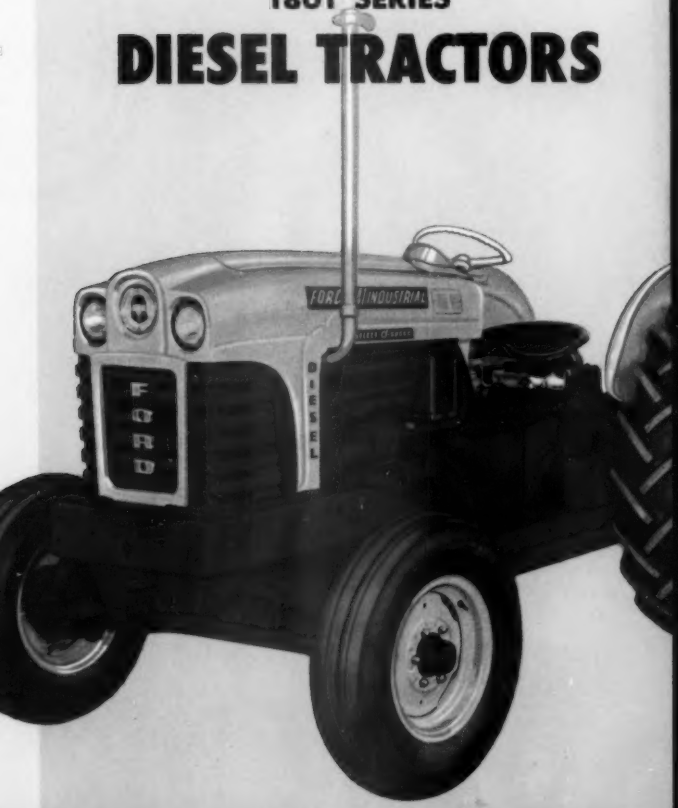
FORD

1801 SERIES

DIESEL TRACTORS



ALL NEW FROM FORD FOR '59

- **For any power job**—Utility, All Purpose and Industrial tractors, gasoline or diesel.
- **For any mowing or maintenance job**—Dozens of man and money-saving implements and attachments, including many specialized tools matched to Ford.
- **For any digging job**—10 ft., 12 ft. and 14 ft. backhoes with bucket and stabilizer pad options for all kinds of digging.
- **For any loading job**—Heavy Duty, Extra Heavy Duty and Super-Duty Loaders with 1000 to 2500 lb. rated capacities.

Design, materials and or specifications are subject to change without notice and without liability.

Ford industrial tractors and equipment can help solve problems, beat schedules and save money on your job, too. Why not talk to your nearby Ford Tractor and Equipment Dealer about easy credit terms? Get full details on all of Ford's new industrial line for '59, on the exciting new Select-O-Speed transmission. See him today, or write Industrial Sales Department, Ford Motor Company, Birmingham, Michigan.

YOU SEE MORE
FORDS
BECAUSE THEY
SAVE MORE MONEY!

PRINTED IN U.S.A.

TEAR OUT FOR HANDY REFERENCE

IT'S NOT THE INITIAL COST
it's the upkeep...
Competitive bidding on water works projects has brought the price of comparable pipes of different specified materials to a nearly common level. Today, the important consideration for the buyer is not so much the first cost as the maintenance charges which continue throughout the life of the pipeline.
In any such comparison, the superiority of LOCK JOINT CONCRETE PRESSURE PIPE is demonstrated by the experience of hundreds of municipalities. For example, records of one of the country's largest industrial cities indicate only minor maintenance or repair charges in the last 10 years against more than 18 million inch feet of LOCK JOINT CONCRETE PRESSURE PIPE in its water works system.
Your city, too, can virtually eliminate maintenance expense, and save many times the initial installation cost with Lock Joint Concrete Pressure Pipe.
F. Osborn
LOCK JOINT PIPE CO.
East Orange, New Jersey
Sales Offices: Chicago, Ill. • Columbia, S. C. • Denver, Col. • Detroit, Mich.
Hartford, Conn. • Kansas City, Mo. • Perryman, Md.
Pressure • Water • Sewer • REINFORCED CONCRETE PIPE • Culvert • Subaqueous

new model H-50 joins.

5,000 lb. carry capacity...3/4 to 2 yd. buckets

The model H-50 is the successor to the model HU in the "PAYLOADER" line of 4-wheel-drive tractor-shovels, and is another example of the continual development program that has maintained Hough leadership in tractor-shovel design and performance. The model H-50 contains a number of improvements that give it outstanding performance for a machine in this size range.

Full 5,000 Lb. Carry Capacity

You can lift loads of 7,000 lbs. to maximum dumping heights, and can CARRY LOADS up to 5,000 lbs., which means you can use buckets up to 2 cu. yd., depending on the materials to be handled. The bucket tips back low and close — with better balance and stability and with less spillage.

More Power

The H-50 gives you a choice of gasoline or diesel engines and more horsepower in both types — 92 hp gasoline, 90 hp diesel. These bigger engines provide more power for both propulsion and hydraulics without "lugging down".

Easy, Full-Power Operation

Power-shift transmission with three speeds forward and reverse, plus easy power-steer and 4-wheel power brakes, assure fast operation with minimum operator effort . . . promote a high production rate the full shift.

Full Protection for Long Life

The brakes of the front wheels are sealed to prevent scoring and glazing by foreign matter. Large oil-bath air filters and cartridge-type oil filter protect the engine. Two cartridge-type oil filters protect the hydraulic system oil and the transmission-torque converter oil.

More Attachments...More Uses

The widest choice of attachments are available, including these exclusive ones: Drott 4-in-1 bucket, Wain-Roy Back-hoe, Vibratory compactor, Ram Black-top spreader . . . also blower, "V" and blade snow plows, angling back-filler, back-rip scarifier, winch and others.

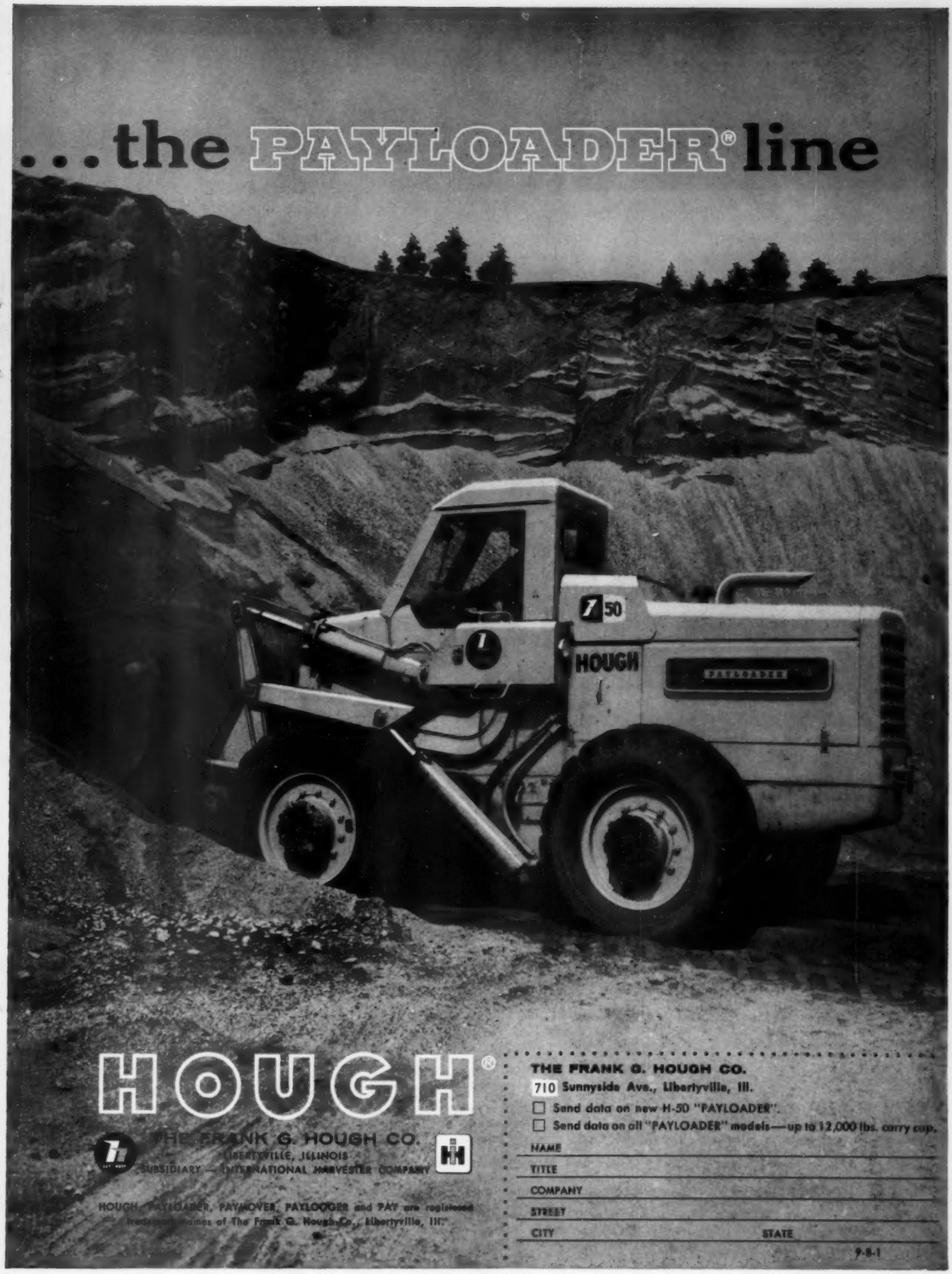
YOU CAN IMITATE APPEARANCE BUT YOU CAN'T DUPLICATE EXPERIENCE

Model H-70: 7000 lb. carry capacity; 1⅛ to 3½ cu. yd. buckets; gas or diesel engines — 110 h.p.

Model H-90: 9000 lb. carry capacity; 1½ to 5 cu. yd. buckets; gas or diesel engines — 122 to 162 h.p.

Model H-120: 12,000 lb. carry capacity; 3¾ to 6 cu. yd. buckets; 300 h.p. diesel.

...the PAYLOADER® line



HOUGH®

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
A SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY

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THE FRANK G. HOUGH CO.
710 Sunnyside Ave., Libertyville, Ill.
☐ Send data on new H-50 "PAYLOADER".
☐ Send data on all "PAYLOADER" models—up to 12,000 lbs. carry cap.

NAME
TITLE
COMPANY
STREET
CITY STATE

9-8-1

FREE CATALOGS

These Catalogs Will Help You

By checking over these listings you can secure without charge important up-to-date information on many of the problems which may be troubling your city.

Write directly to the address given or use the Post Card on page 55.

Refuse Incineration

231 Whether your community be large or small, there is a type of refuse incinerator plant best suited to its needs. To learn of several types, all available with a fly ash elimination system, write NICHOLS ENGINEERING & RESEARCH CORP., 70 PINE ST., NEW YORK 5, N. Y. It will aid you in arriving at a better answer to your municipal refuse problems.

Skid-Proofs Icy Streets, Resurfaces Pavements

232 Hydraulic and mechanically controlled spreaders for ice control and resurfacing work capable of laying granular materials in narrow strip or full traffic lane width, at speeds up to 30 mph, are described in literature offered by SWENSON SPREADER & MFG. CO., LINDENWOOD, ILL.

Coin Changers

233 These machines add to the convenience of using metered, off-street parking facilities, and can contribute to revenue. They operate unattended, are available manual or electric, and in models to fit every need. For literature, write STANDARD CHANGE-MAKERS, INC., 422 E. NEW YORK ST., INDIANAPOLIS, IND.

Pinpoint Gas Leakage

234 "W" Type Surveys are economical safety measures. They provide thorough inspection of mains and services in conjunction with inspection of public and commercial buildings, pinpoint leaks and classify them. For details, write HEATH SURVEY CONSULTANTS, INC., 374 WASHINGTON ST., WELLESLEY 81, MASS.

Traveling Grate Incinerator Stokers

235 Highlighted in literature from COMBUSTION ENGINEERING CORP., 200 MADISON AVE., NEW YORK 16, N. Y., is a "continuous processing" incinerator stoker system, designed to economically handle all types of combustible refuse in quantities ranging up from 50 tons per 24-hour day and demanding only minimum operating attention.

New, Sanitary Refuse Compactor

236 If you would like advanced information, specifications and comparison figures on a new cost-cutting packer-type refuse hauler wth unusual shell-shaped tank and blade desgn, write PAX-IT EQUIPMENT CO., INC., 814 SECOND AVE. BLDG., SEATTLE 4, WASH., for a just-published six-page brochure.

Parking at Station Lots

237 If your city is wrestling with the question of what to do about automobiles in the business district, you might like to know that more and more motorists are parking their cars at rapid transit stations and riding in by train. In Cleveland, for instance, 70% of those who leave their cars at the station become regular patrons of rapid transit. For more information on the subject, write WESTINGHOUSE ELECTRIC, PITTSBURGH 30, PA.

New Fire-Fighting Aid

238 These aerial units boast "3-D" control that permits reliable, positive movement in one, two or three dimensions simultaneously and makes possible critical pinpoint control of the operator's basket. They are available in reach ranges of 32' to 100'. For details, and to learn of Chicago's use of the Hi-Ranger "Snorkels," write MOBILE AERIAL TOWERS, INC., 1730 N. HARRISON ST., FORT WAYNE, IND.

Truck Bodies for Municipal Service

239 A complete line of truck bodies, with loadspace dimensions from 6' to 18' in length, with capacities from 176 to 862 cubic feet, and designed to meet the variety of service needs of municipal offices and public works departments are discussed in the booklet, "'Better-Built' Truck Bodies." Write BOYERTOWN AUTO BODY WORKS, INC., BOYERTOWN, PA.

Step Up Metal Protection

240 Pigment paints that deliver up to 300% greater content of rust-inhibitive ingredient are described in a 24-page catalog offered by NATIONAL LEAD CO., 111 BROADWAY, NEW YORK 6, N. Y., which will point out how you can better protect metal structures from corrosion and weather.

Dig Trench Easily

241 Bulletins from PARSONS CO., NEWTON, IA., describe the 155 Trenchliner, a compact, low and narrow unit developed especially for city digging and able to produce from 3.8 to 25 feet of trench per minute, and the 88 Trenchmobile, a rubber-tired mobile unit that capably handles mainline extensions and underground signal and lighting systems.

Transistorized Pipe Detection

242 Literature announcing the lightweight Detectron "808" states that it outperforms its nearest rival by an average of 50%. The unit excels in distance, depth, pin-point accuracy, and gives sharp, clear signals with positive cut-off. For full information, request *Catalog* AC-9; write COMPUTER MEASUREMENT CO., 5528 VINELAND AVE., NORTH HOLLYWOOD, CALIF.

Erases Unwanted Traffic Lines

243 *Circular* C-59 describes a machine that economically shaves away unwanted or obsolete traffic lines at the rate of 250 to 300 feet per hour. It is one-man operated and features a reversing gear transmission. For the whole story, write ASBURY TRAFFIC LINE SHAVER, 717 S.E. 22nd AVE., FT. LAUDERDALE, FLA.

Water and Sewage Control Valves

244 *Bulletin* 150 lists valve bodies and actuators and the accessory line available for DeZurik control valves. It includes valve sizing data, diagrams the eccentric principle and notes the primary advantages of the valves listed. For a copy, write DEPT. CV, DEZURIK CORP., SARTELL, MINN.

Hauls Up to 25 Yards of Refuse on Two Axles

245 This hauler is designed specifically and exclusively for refuse handling. It is the only 2-axle, all-wheel-drive chassis to accommodate a 20- to 25-yard packer body. And it has just been announced. For full facts, write OSHKOSH MOTOR TRUCK, INC., OSHKOSH, WIS.

Free Paint Selection Guide

246 For every maintenance need there is one paint that will give the most effective protection. An easy way to select the right paint for a given job is to use the *Paint Index* guide. For a free copy, write TROPICAL PAINT CO., 1112-1252 W. 70TH, CLEVELAND 2, OHIO.

Airblast-Clean Parking and Water Meters

247 *Catalog* No. 402-D describes and illustrates suction and pressure blast cabinets suitable for cleaning parking meters and reconditioning used water meters. For a copy, write WHEELABRATOR CORP., MISHAWAKA, IND.

Keep Birds Away, Buildings Attractive

248 Costly cleaning and repair of buildings, necessitated by bird droppings, can be eliminated through use of Bur-Co, which keeps birds away, yet is not harmful to them, humans or buildings. For descriptive literature on this bird repellent, write BURR CHEMICAL CO., DEPT. L, 3329 AUBURN ST., ROCKFORD, ILL.

Protects Metals Against Salt-Slush Corrosion

249 Full details on how your community's cars, bridges and public equipment can be protected inexpensively and effectively against the corrosive action of salt-slush can be obtained in the form of *Booklet* 420-12-3, available from CALGON CO., DIVISION OF HAGAN CHEMICALS & CONTROLS, INC., HAGAN BLDG., PITTSBURGH 80, PA., makers of the additive Banox.

Rotary Broom Winder for Street Sweepers

250 Cores of new DuPont Tynex and steel wire, as well as Palmyra and Bass, can be wound in 8 to 10 minutes by the Ben-Ko-Matic rotary broom winder. Brooms are even and perfectly balanced and are 10 feet in length. For literature on this new unit, write BEN-KO-MATIC, INC., 8028 N. JERSEY ST., PORTLAND 3, ORE.

Stainless Uniform Fabric

251 A new, long-wearing uniform fabric called FFB (Four Fiber Blend) Gabardine — dacron, orlon, wool and other fibers — is available with "Scotchguard" brand stain-repeller that imparts water and oil repellency to the fabric. For details, and results of tests against other fabrics, write MOUNT VERNON MILLS, INC., BALTIMORE 2, MD.

(See page 44 for more Bulletins)

Today's smallest two-way mobile radio - actual size!

New General Electric Transistorized Progress Line

General Electric's new Transistorized Progress Line will fit in more places, in more different positions, than any other two-way mobile radio you can buy today.

Not only is this the world's smallest, lightest commercial two-way mobile radio, but standby battery drain is so low you need never turn off your TPL mobile unit, just like the clock in your car. You install no special generator, use less gas, require fewer engine jobs.

TPL is the first two-way radio that transmits up to 75 watts of power in high band . . . the first that really fits under the dash . . . the first to realize the full benefits of transistorized design (no more than four tubes) . . . the first to eliminate bulky cables through new one-piece design of receiver control and transmitter . . . the first with shielded dirt-free ventilation.

The new General Electric TPL ushers in a new era of convenience and reliability in mobile communications. Don't miss all the exciting details. Write General Electric Company, Communication Products Department, Section 199, Mountain View Road, Lynchburg, Virginia.

GENERAL ELECTRIC

Communication Products Department

OPEN FOR BUSINESS
in EVERY KIND OF WEATHER

MI-CO MANUAL PARKING METERS perform uninterrupted service in any climate, in any season. Hot, cold, wet or dry . . . here and abroad, every day finds MI-CO Meters collecting revenue and improving traffic control. These indeed are rugged meters; scientifically engineered for longer, profitable, trouble-free service. Only six moving parts, so simple that rare operating difficulty can be corrected on the spot. Coin slot shield defies weather, but admits all coin denominations. MI-CO adjusts to any number of hours, and 1¢ to 25¢. Before you place or replace meters in your streets, lots or garages, investigate MI-CO superiorities . . . including the exclusive tamperproof coin collection system.

A Symbol of High Quality

MI-CO PARKING METERS, P. O. BOX 668-AC, COVINGTON, KENTUCKY

(The Michaels Art Bronze Co., Inc., General Offices and Plant, Erlanger, Kentucky)

OTHER MICHAELS PRODUCTS: Architectural Metal • Curtain Walls
Display Cases • Reversible Windows • Tablets • Memorials • Signs

MONEY SAVING *catalogs*

Write directly to the address given or use the Post Card on page 55.

Motors for Vertical, Turbine Pumps

252 Vertical motors, available in a wide range of horsepower ratings with enclosures and insulations to meet all environmental conditions, are discussed in *Bulletin* 212 (15-125 hp) and 219 (150 hp or larger). Write THE IDEAL ELECTRIC & MFG. CO., 309 E. FIRST ST., MANSFIELD, OHIO.

Selective Traffic Signal Operation

253 Traffic signal control that adjusts to moment-to-moment needs of traffic rather than following a pre-set pattern of phase rotation and timing is the subject of *Bulletin* C-132, which describes the 1826N, applicable to a wide range of intersection types and signal problems. Write EASTERN INDUSTRIES, INC., AUTOMATIC SIGNAL DIV., NORWALK, CONN.

Materials Handling Equipment

254 New bulletins now available from the ENGINE MATERIAL HANDLING DIV., ALLIS-CHALMERS MFG. CO., MILWAUKEE 1, WIS., include: *BU*-600, which gives data on the FTB 30-24, 3000-pound capacity lift truck; *BU*-497, an 8-page catalog that describes accessories and optional equipment for A-C lift trucks; *BU*-499, which covers allied equipment for A-C lift trucks.

Tyton and Mechanical Joints

255 The advantages of using Tyton joint cast-iron pipe for water service and Mechanical joint for water and gas service are discussed in a newly-released 8-page catalog that also gives particulars on pipe foot lengths and fittings. For a copy, write McWANE CAST IRON PIPE CO., BIRMINGHAM, ALA.

Diesel Engines

256 If you are interested in rugged, heavy-duty, low-speed diesels, designed to produce more power per gallon of fuel oil than comparable engine-generators, you'll want to inquire about the complete line of Superior engines that can be custom-engineered to exact requirements. Write WHITE DIESEL ENGINE DI., WHITE MOTOR CO., SVPRINGFIELD, OHIO.

Waste Receptacles and Buckets

257 These units can help reduce municipal maintenance costs and contribute substantially to keeping cities attractive and litter-free. For details on these heavy-duty, non-corrosive refuse and trash baskets, garbage pails, mops and utility buckets, write WHEELER CORRUGATING CO., WHEELING, W. VA.

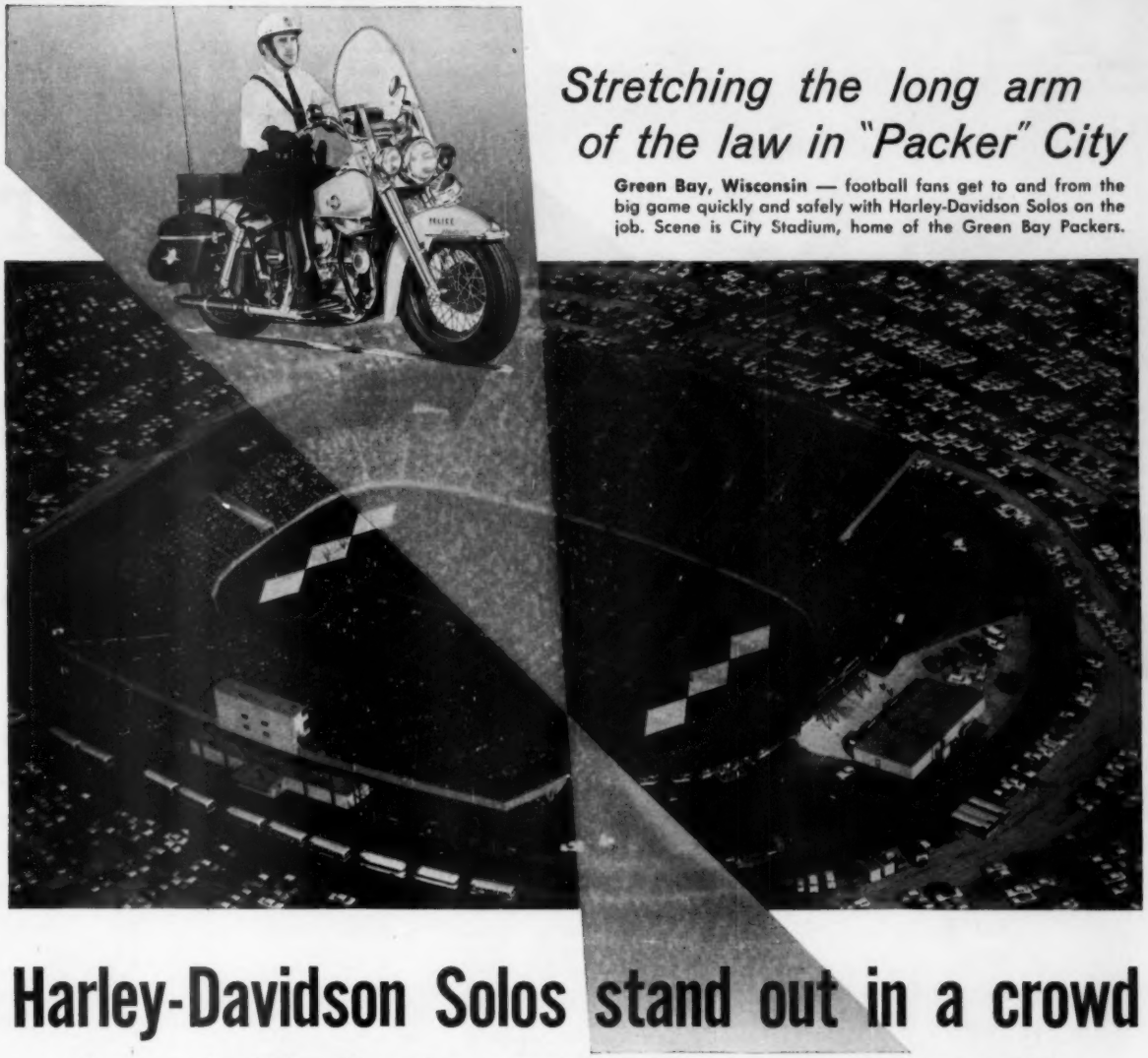
Sewage and Sump Pumps

258 *Bulletins* SE-860 and SE-865 give complete engineerng information on submersible sewage and sump pumps manufactured in discharge sizes of 3" to 6", in capacities up to 2000 gpm, with a choice of two controls and two motors (1750 rpm and 1140 rpm). For copies, write WEIL PUMP CO., 1518A N. FREMONT ST., CHICAGO 22, ILL.

Self-Filling, Self-Draining Photocopier

259 In addition to being completely automatic, and able to reproduce any written, typed, printed, drawn or stamped original up to 11" in width, the new Golden Corvette desk-copier features electric push-button filling and emptying that eliminates spilling, soiling and spoilage. For details, write CORMAC PHOTOCOPY CORP., 80 FIFTH AVE., NEW YORK 11, N. Y.

(See page 48 for more Bulletins)



Stretching the long arm of the law in "Packer" City

Green Bay, Wisconsin — football fans get to and from the big game quickly and safely with Harley-Davidson Solos on the job. Scene is City Stadium, home of the Green Bay Packers.

Harley-Davidson Solos stand out in a crowd

. . . keep traffic flowing smoothly at special events

Wherever crowds gather, officers mounted on Harley-Davidson Solos are *standouts* at keeping the situation under control. The Solo's ability to move quickly through congested areas prevents traffic jams and keeps accidents down to a minimum.

Solos are *standouts* in other ways too. They are potent symbols of law and order . . . provide the quick, visual recognition so essential to crime and accident prevention. And there are no better good will ambassadors than solo-mounted officers . . . quickly *identifiable* and *accessible* to the citizen requiring information or assistance.

To learn more about how you can stretch *your* equipment and man-power dollars with Solos and Servi-Cars, see your dealer or write Harley-Davidson Motor Co., Milwaukee 1, Wisconsin for free, illustrated literature.

HARLEY-DAVIDSON

Police Motorcycles

Match tractor sizes to your jobs

Trucks fill fast when loaded with a 45 hp* International 340 Utility equipped with Fast Reverser and exclusive new International Wagner side and front-dump bucket.

KEY INTERNATIONAL TRACTOR SPECIFICATIONS

Tractor model	Max. Flywheel horsepower*	No. of cyl.	Belt horsepower*	Drawbar horsepower*	LP Gas engine	Diesel engine	Base working weight, lb†	Speeds forward	Hydraulic pump capacity gpm	Power Steering
Cub Lo-Boy	13.4	4	10.75	10.08	—	—	1,895	3	2.8	—
I-240 Utility	38.5	4	32.24	28.91	—	—	3,637	4	9.3	yes
I-340 Utility	45.0	4	35.24	32.41	—	—	4,365	5 or 10#	9.3, 12, or 17	yes
T-340 Crawler	45.0	4	35.00	31.00	—	—	5,600	5 or 8#	9.3, 12 or 17	—
I-460 Utility	61.0	6	52.43	48.16	yes	yes	5,255	5 or 10#	12 or 17	yes
I-560	72.5	6	65.25	59.47	yes	yes	6,563	5 or 10#	12 or 17	yes
I-660	95.0	6	80.00	72.00	yes	yes	8,180	5 or 10#	12 or 17	yes

*At standard sea level conditions

#with Torque Amplifier Drive
†with 175-lb operator, no added weight

Three six-cylinder power ratings, 61 to 95 hp*! Each is available with gasoline, Diesel, or LP Gas engine. Super-smooth "sixes," almost vibration-free, are far less fatiguing to operate and help step up daily output. Below, the 61 hp* International 460 Utility with International Wagner loader and backhoe.

Three four-cylinder power ratings, 13.4 to 45 hp*! Economical four-cylinder engines are real fuel-misers with high-torque design that keeps them on-the-drive under heavy load. Below, the economical 38.5 hp* International 240 Utility with seven-gang reel mower.

Your lowest-cost power buy for all-around utility, the International Cub® Lo-Boy®, left, and its running mate, right, the higher clearance Farmall Cub®. Both Cubs are equipped with 60-inch, center-mounted International Danco rotary mowers.

Internationals can make your 1960 budget go further

International's complete lineup of utility power can stretch next year's budget. Seven power sizes—13.4 to 95 hp*—provide power for the widest range of utility duty. Rate your power needs job by job and you'll find an International sized, priced, and powered to match.

Built-in brawn provides an extra margin of dependability—insures continued stand-up performance under rated maximum loads. An unexcelled power-weight ratio turns International brawn into improved traction that keeps operations on schedule. Job-matching options such as power steering, Torque Amplifier Drive, Fast Reverser, and fast-acting hydraulic systems cut costly time off jobs.

Unit-matched equipment—backhoes, loaders, blades, scrapers, and other equipment as well—take full operating advantage of International's greater built-in brawn to speed heaviest work.

Maximum flywheel horsepower

New low-cost International T-340 crawler delivers 45 hp*! It provides power, speeds, job range, and handling ease new to small crawler operations. New planetary-type steering plus production-boosting options such as Torque Amplifier Drive or Fast Reverser insure top-capacity performance.

SEE YOUR INTERNATIONAL HARVESTER® DEALER

International Harvester Products *pay for themselves in use*—Farm Tractors and Equipment ...Industrial Tractors...Motor Trucks...Construction Equipment—General Office, Chicago 1, Ill.

FOR THE FULL STORY...
International Harvester Company, Dept. AC-9
P. O. Box 7333, Chicago 80, Illinois.

Please send me information on

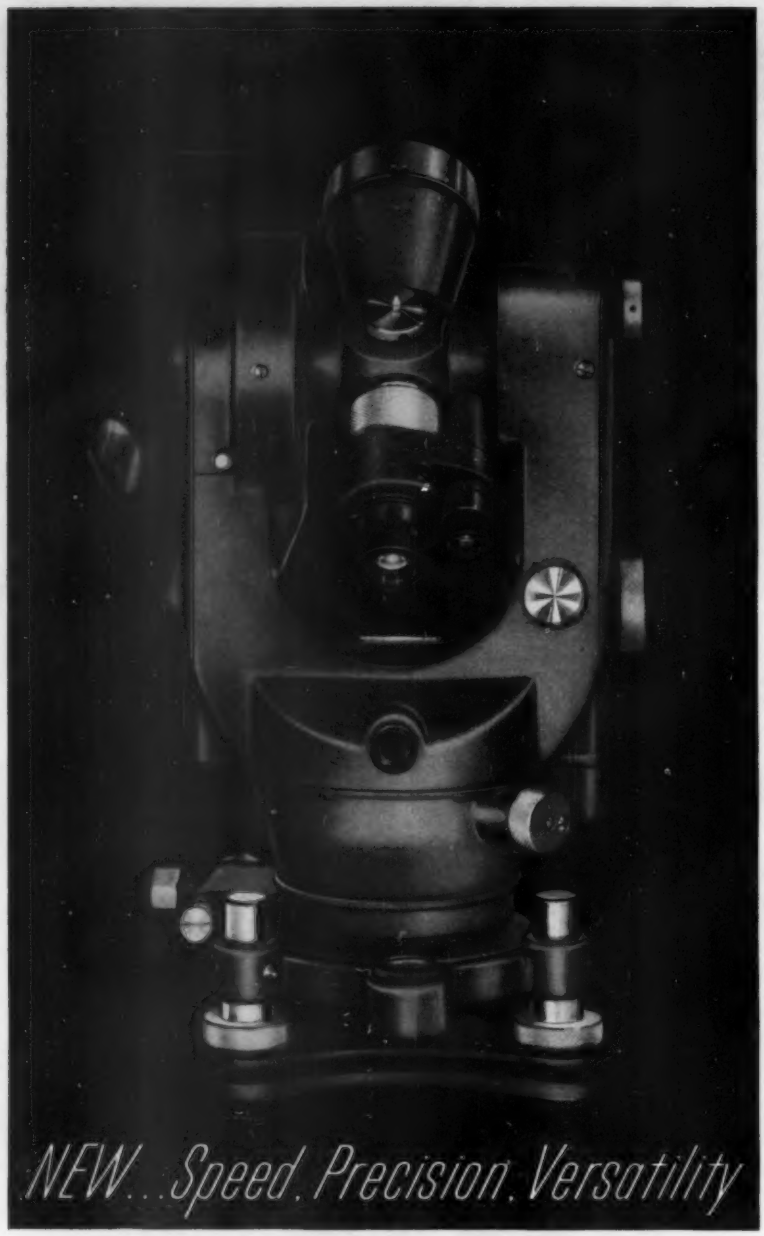
- ☐ 13.4 hp International Cub Lo-Boy
- ☐ 38.5 hp International 240 Utility
- ☐ 45 hp International 340 Utility
- ☐ 45 hp International T-340 crawler
- ☐ 61 hp International 460 Utility
- ☐ 72.5 hp International 560
- ☐ 95 hp International 660

Name

Title

Street and No.

P.O. State



WILD T-1A OPTICAL REPEATING TRANSIT

All the ruggedness, simplicity, and trouble-free performance of the world renowned T-1...plus the convenience and extra speed of automatic vertical collimation setting.

Vertical angles can be read immediately after set-up. No need to center vertical circle level...no cleaning or maintaining moving parts.

Highway, mining, or any other surveying project, day or underground, becomes routine with the Wild T-1A.

Upper and lower motions for setting on zero and for repeating. Built-in optical plummet.

Write for Wild Booklet T-1A.

In Canada: Wild of Canada Ltd., 157 Maclaren St., Ottawa, Ontario

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INSTRUMENTS, INC.
Main at Covert St. • Port Washington, N.Y. • POrt Washington 7-4343
FULL FACTORY SERVICES

FREE catalogs

Write directly to the address given or use the Post Card on page 55.

Sweep Snow Away

260 Loose snow up to 6" in depth is swept clean from parking lots, streets, runways, playgrounds and skating rinks by these tractor-sweeper combinations. Descriptive literature gives full details on three types and two sizes. For copies, write M-B CORP., NEW HOLSTEIN, WIS.

Self-Winding Parking Meters

261 These meters accept tokens and coins of four denominations. They permit hundreds of practical time and rate combinations for off-street and curb parking facilities. Tough and rugged, they resist vandalism and are simple to maintain. For literature, write DUNCAN PARKING METER, 835 N. WOOD ST., CHICAGO 22, ILL.

Specialized Maintenance Equipment

262 For illustrated bulletins, action photos and performance data on an ultra-clean sweeping vacuumized street sweeper, traffic line erasers, concrete routers and small power sweepers, write G. H. TENNANT CO., 751K N. LILAC DRIVE, MINNEAPOLIS 22, MINN.

Voting Machines

263 Designed to fill every ballot requirement and comply with the election laws of all states, these voting machines also reduce voting costs and insure greater speed and accuracy of results. For descriptive literature, write THE SHOUP VOTING MACHINE CORP., 41 E. 42nd ST., NEW YORK 17, N. Y.

Chemical Proportioning Pump

264 Descriptive literature on the new electrically-driven Proportioneers 1210 Chem-O-Feeder, which features a corrosion-resistant transparant plastic head, Hypalon diaphragm and check valves and straight through flow design, can be obtained from B-I-F INDUSTRIES, INC., 345 HARRIS AVE., PROVIDENCE 1, R. I.

Water Filtration for the Small Community

265 A complete line of diatomaceous earth filters, designed to more effectively solve the water filtration problems of the small community, offers maximum filtration efficiency and capacity coupled with minimum space requirements. For descriptive literature, write R. P. ADAMS CO., INC., 202 E. PARK DRIVE, BUFFALO 17, N. Y.

Custom-Built Fire Apparatus

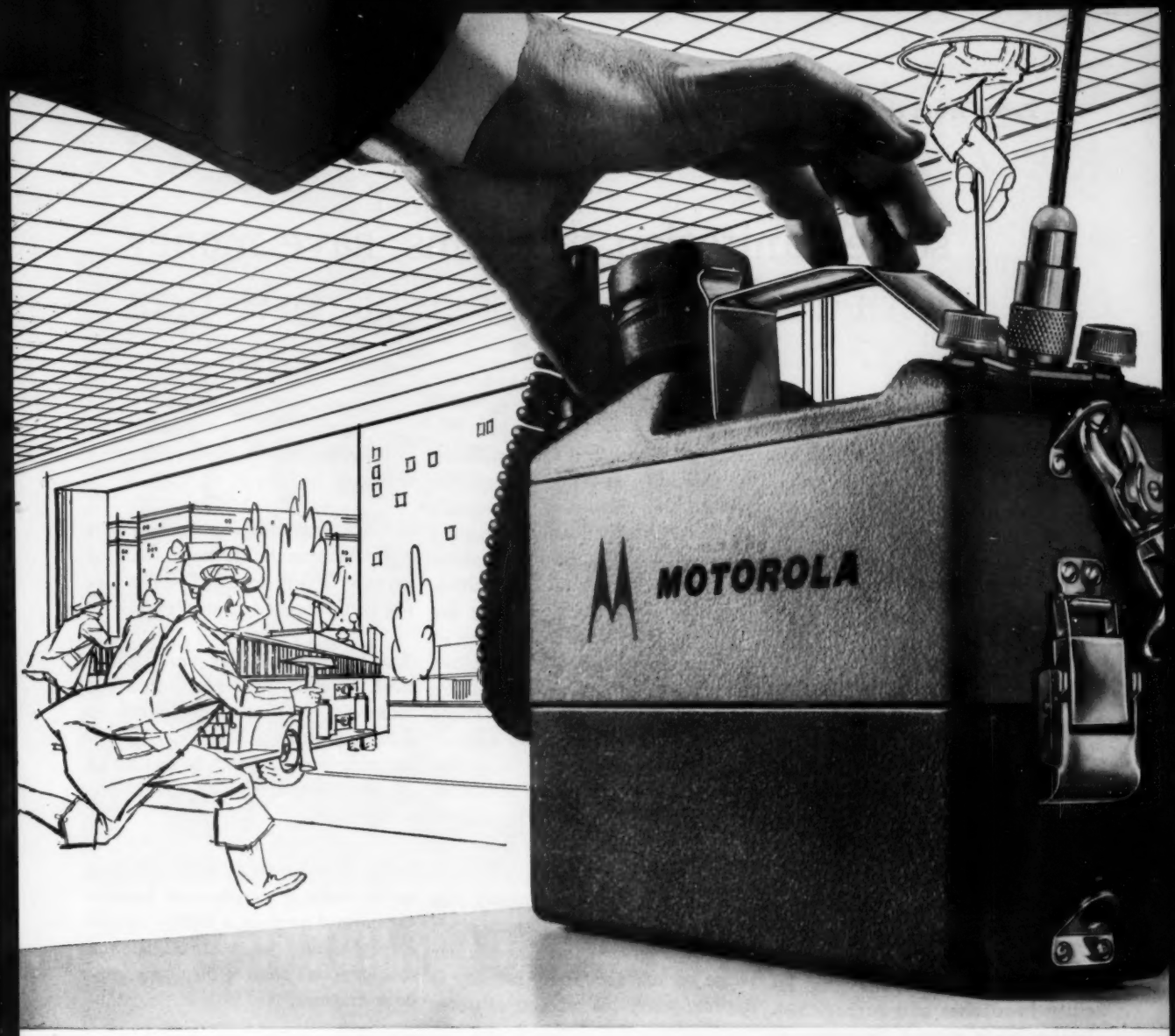
266 A complete line of totally reliable pumpers, squad and hose wagons, aerials and combination ladder trucks built to specific requirements and offering a choice of engines, cab-forward and standard units, air or hydraulic brake systems, conventional or automatic transmissions, etc., are available from MACK FIRE APPARATUS, ALLENTOWN, PA.

In-Place Soil Testing

267 *Bulletin* 700-R describes a speedy, inexpensive and simple method of obtaining accurate in-place data on shear values of cohesive materials. It will be of interest to engineers and others responsible for gathering soils information preparatory to foundations construction, road building, etc. For a copy, write ACKER DRILL CO., INC., P. O. BOX 830, SCRANTON 2, PA.

(See page 52 for more Bulletins)

P.O. State



Be sure to take it with you... *YOU'LL NEED IT!*

The instant you arrive, you're fighting for *control* . . . and those *first few minutes are critical!* Your Motorola "Handie-Talkie" portable radios will help you get reports from every trouble spot . . . and relay instructions in *seconds*. You are in constant contact with all members of your fire fighting team.

For faster fire fighting, make sure that you have *enough* "Handie-Talkie" portables.

Transistors, plated chassis and other improvements increase reliability . . . make this the smallest, lightest portable 2-way radio available. You also benefit from the long battery life and obsolescence-free design. And only Motorola can offer you a portable radio with a full 8 watts output. One of the 43 "Handie-Talkie" radios is ideal for your needs. Write for complete literature today.

MOTOROLA Handie-Talkie®
RADIOPHONE

Motorola Communications & Electronics, Inc., 4501 Augusta Blvd., Chicago 51, Illinois, A Subsidiary of Motorola, Inc.

Proof from over 60 U.S. cities: you can . . .

solve sanitation problems, save money with a city-wide garbage disposer plan

Progressive cities such as Detroit, Denver, Columbus, Ohio and Lodi, Wis. have joined the trend to "garbage-free" communities . . . with taxpayers' hearty approval.

City planners of Lodi, Wis., tired of dumping facility headaches and garbage collection costs, passed an ordinance making garbage disposers mandatory in all homes. In less than two years, this move has brought gratifying results. Not only is the plan ridding the city of disease-bearing garbage, but also it is saving this city of 1600 people over $3000 a year on garbage collection alone.

When this plan was considered by Lodi officials, the leading makes of garbage disposers were tested. Several were approved for the plan, which called for the purchase of disposers by home owners through their plumbing contractors. Satisfaction with In-Sink-Erator disposers, the choice of most home owners, has helped make the plan a success, Lodi's Mayor Fisk reports.

Altogether, over 60 U. S. cities, large and small, are proving the "garbage-free" community plan to be the most effective way to remove health hazards and make life more comfortable for their citizens. These plans are completely debunking all misconceptions about garbage disposers. A recent survey of cities with disposer ordinances highlights these important facts:

1. The use of garbage disposers does not impose a critical load on the city's sewage system. The increase in water usage per average family per day is approximately the amount of water required for one flushing of a water closet.

2. Garbage ground in disposers does not clog sewage systems. Ground garbage is 95% water. The remaining solids are easily water borne.

3. A city-wide disposer plan is practical. Eliminating garbage means a reduction of approximately 50% in collection tonnage. Collection of remaining material can be spaced at greater intervals, greatly reducing collection costs.

4. Ground garbage does not clog septic tanks. If a septic tank handles the normal needs of a family, it will easily handle the small additional load of solids passing through a garbage disposer.

"Satisfaction

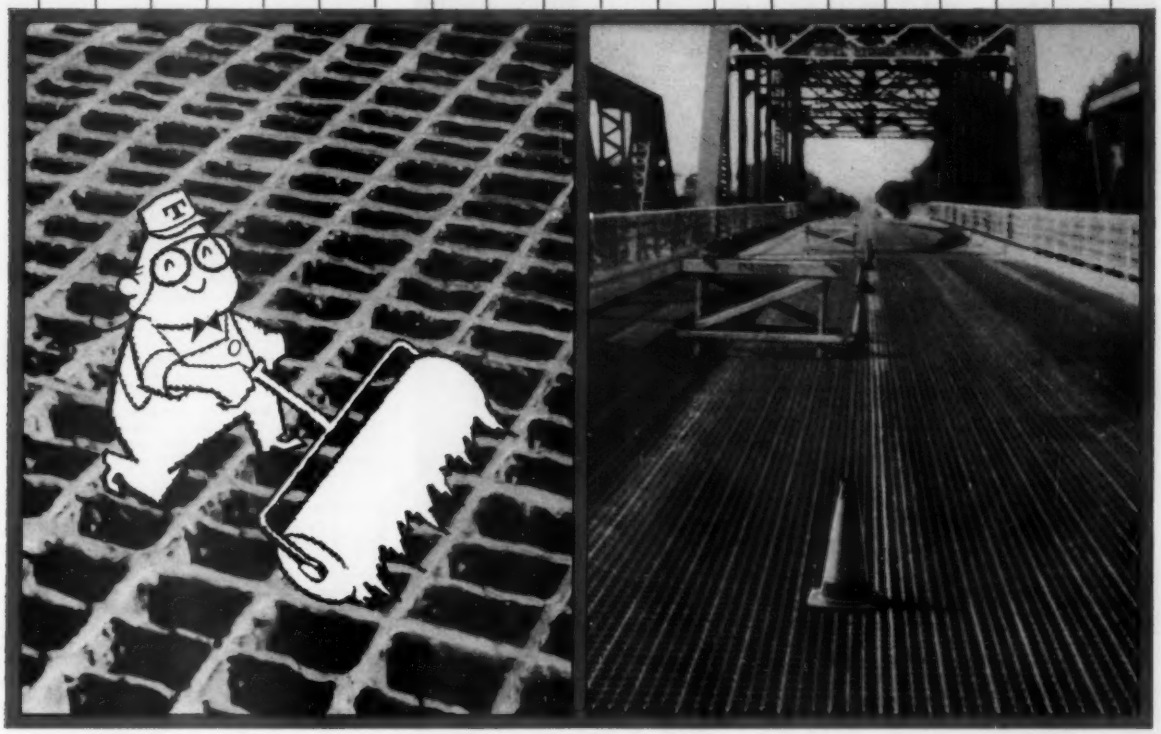
. . . with In-Sink-Erator disposer, the choice of most home owners, has helped make the plan a success," Lodi's Mayor Fisk reports. When the garbage-free community idea is considered by your city council, In-Sink-Erator will gladly furnish any additional information and consult personally with city officials on this very important matter.

Your city, no matter what its size, can benefit from a city-wide plan that utilizes garbage disposers to eliminate garbage problems. For full details, a list of "garbage-free" communities, and sample city ordinances, write In-Sink-Erator Manufacturing Co., Racine, Wis.

JOIN THE DRIVE SPONSORED BY IN-SINK-ERATOR AND *THE AMERICAN CITY* MAGAZINE FOR "GARBAGE-FREE" COMMUNITIES! WRITE TO IN-SINK-ERATOR TODAY!

IN-SINK-ERATOR MANUFACTURING CO., RACINE, WIS., ORIGINATOR AND PERFECTER OF THE GARBAGE DISPOSER

REPORTS *on concrete bonding with* THIOKOL *LP/Epoxy compounds*



#3 ROLLING OUT A SAFETY CARPET

Steel grid road surfaces on bridges throughout the country have proved a source of frequent vehicular accidents. The Mossdale Bridge over California's San Joaquin River was no exception.

When cars passed from smooth concrete pavement to steel grid, there was an instantaneous and startling sound, vibration and change of wheel traction. This sudden change caused an instinctive reaction in many motorists to apply brakes abruptly, causing disastrous skids and pile-ups.

The California Bureau of Highways experimenting with THIOKOL Liquid Polymer/Epoxy Resin formula found a simple and inexpensive solution to the problem. Accident factors were eliminated by roller coating grids with LP/Epoxy compound and applying aluminum oxide abrasive to the still wet adhesive. In a test, one side of the Mossdale Bridge was treated. Since September of '56, no accidents have occurred in this area, while six mishaps have taken place on the untreated side.

Bridge and highway authorities everywhere can roll out a safety carpet for motorists—quickly, easily, economically—with THIOKOL LP/Epoxy. For full information, send the coupon.

Thiokol®

CHEMICAL CORPORATION

780 NORTH CLINTON AVENUE • TRENTON 7, NEW JERSEY

In Canada: Naugatuck Chemicals Division, Dominion Rubber Co., Elmira, Ontario

●Registered trademark of the Thiokol Chemical Corporation for its liquid polymers, rocket propellants, plasticizers and other chemical products.

FOR MORE INFORMATION: Mail coupon to Dept. 53, Thiokol Chemical Corp., 780 N. Clinton Ave., Trenton, N. J.

Gentlemen: Please send me available data on THIOKOL LP/Epoxy adhesives for highway use.

Firm_____

Street_____

City_____ State_____

Your Name_____

"If you're thinking about a Municipal Trust or Fiscal Agency talk to the people at Chase Manhattan"

New York's leading bank has the men and the experience you need to handle Municipal Trust details at high-level efficiency.

* * *

Any municipal or governmental unit considering a bond issue will find it profitable to talk to the people at Chase Manhattan.

Chase Manhattan's Trust Department is staffed with people long experienced in every detail of acting as Municipal Trustee and Fiscal Agent. Their experience and technical skill enable them to serve you efficiently and administer any agreement, no matter how complicated.

The range of Chase Manhattan trusteeship runs from the nation's biggest toll roads to its most expansive utilities. Chase Manhattan municipal trust customers extend to every corner of the free world.

If you are an officer of a municipality or a governmental unit, talk to the people at Chase Manhattan about your trusteeships. The address is 40 Wall Street, New York 15. The telephone number—HAnover 2-6000.

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FREE catalogs

Write directly to the address given or use the Post Card on page 55.

What's In a Fire Hydrant?

268 What's in the B-50-B hydrant is answered by *Bulletin* 5710, which points out the construction features that contribute to foolproof operation, less maintenance, longer life. For a copy, write DARLING VALVE & MANUFACTURING CO., WILLIAMSPORT 10, PA.

Pneumatic-Tire Roller

269 Chief among nineteen features stressed in literature describing this new 12-ton pneumatic-tire roller is Equa-Matic front-end construction, which assures firm compacting contact with the surface at all times by the roller's five wheels. For full facts, write THE GALION IRON WORKS & MFG. CO., GALION, OHIO.

Snow Plows to Meet Your Needs

270 Four basic types of plow, each with models to fit 1½- to 12-ton trucks and each designed for faster, safer removal of snow at lower cost, are detailed in descriptive literature, available from FRINK SNO-PLOWS, INC., CLAYTON, N. Y.

Transite Water Pipe

271 This water pipe is made of tough, durable asbestos-cement. Illustrated literature describes it as being rustproof, corrosion resistant, quick and easy to install. Its smooth interior contributes to keeping pumping costs low. For information on how Transite water pipe can serve your community, write JOHNS-MANVILLE, DEPT. AC, BOX 14, NEW YORK 16, N. Y.

Ice Control

272 With a "Jet" spreader, ice control on streets and highways is certain to be efficient. Available in engine-driven, hydraulic and direct power take-off models, these cab-operated units spread salt, cinders, sand or gravel in widths, depths and patterns to meet individual needs. For complete information, write GOOD ROADS MACHINERY CORP., MINERVA, OHIO.

Count, Stack, Package Coin Faster

273 This coin-packaging kit saves time for those who count and package coin. Each color-keyed, funnel-top tube of unbreakable abrasion-resistant hi-linear polyethylene comes in standard bank colors (red for pennies, blue for nickels, green for dimes, orange for quarters). Each is designed for use with flat tubular wrappers. For literature, write BLOCK & CO., INC., 350 W. ONTARIO ST., CHICAGO 10, ILL.

Maintenance-Free Fencing

274 Aluminum fencing that needs no protective coating, has high strength, is light weight and so can be erected more easily, is discussed in a 12-page illustrated booklet available from ALUMINUM COMPANY OF AMERICA, 2058-J ALCOA BLDG., PITTSBURGH 19, PA.

Portable Electric Plant

275 A new 10,000 AC electric plant, available either skid or trailer-mounted, and equipped with 4-cycle, 4-cylinder air cooled Wisconsin engine and 16 outlet receptacles for convenient operation of power tools, is the subject of literature obtainable from PACIFIC MERCURY, 14052 BURBANK BLVD., VAN NUYS 1, CALIF.

(See page 54 for more Bulletins)

Long-Range Forecast:

Try the New

SHUTTLE

Clutch!

Reverse directions fast with a simple, straight-line move of a lever... no foot clutching! Tractor speed is the same in both directions for safe, time-saving loading!

Be Ready–

with low-cost "D" Tractors

Stay ahead of street and sidewalk snow removal this winter with low-cost Allis-Chalmers D-Series wheel tractors. Whether your problem is plowing or snow removal, these speedy tractors get the job done fast! Here's why:

On plowing jobs, these tractors carry weight low and spread out for maximum traction to keep snow rolling.

On loading jobs, the close-quarter maneuverability of D-Series tractors means traffic keeps moving while the job is in process. Loading cycles are short and fast because Allis-Chalmers tractors turn tighter than any other in their class. Match removal equipment to your needs: reversible blade or V-type plows, rotary brooms, front-end loaders with special snow loading buckets—they're all available through your Allis-Chalmers dealer. Get the facts today!

D-10
D-12
D-14
D-17

Utility tractors from 30 to 63 engine horsepower... all with the companion equipment you want and need year 'round!

SOLD BY ALLIS-CHALMERS DEALERS EVERYWHERE!

YOU NEED *These catalogs*

Write directly to the address given or use the Post Card on page 55.

Asphalt Paver Feeders

276 *Bulletin* KC-625 not only illustrates and describes Clark asphalt paver feeders, but shows their use in conjunction with pavers and Clark windrow sizers. For a copy of this 4-page bulletin, write KOEHRING COMPANY OF CALIFORNIA, 2200 COUNTRY CLUB BLVD., STOCKTON 4, CALIF.

Protect Water Tanks

277 For information on long-life protective coatings for water storage tanks that prevent corrosion of vital structural joints and catwalks as well as large exterior and interior surface areas, write KOPPERS COMPANY, INC., PRODUCTS DIVISION, DEPT. 103J, PITTSBURGH 19, PA.

Sweeps Streets at Low Cost

278 Street sweeper brushes that assure 3,000 sweeping miles or 500 sweeping hours increase savings through easier maintenance, less brush replacement and minimum storage, and reduce costs to less than 10 cents per sweeping mile, are the subject of informative literature, available from NEWARK BRUSH COMPANY, 260 MICHIGAN AVE., KENILWORTH, N. J.

Hough Announces New Tractor Shovel

279 Literature and complete specifications on a new, four-wheel drive, rubber-tired tractor shovel with 5,000 pounds carry capacity and designated Model H-50 can be obtained from THE FRANK G. HOUGH CO., 710 SEVENTH AVE., LIBERTYVILLE, ILL.

Trouble-Free Fire Hydrant

280 *Bulletin* No. 591 discusses the K-10, a new fire hydrant containing a minimum number of parts, featuring "O" Ring Seal construction, and manufactured in 4", 4½" and 5" sizes with a variety of pipe and connections to meet every need. For a copy, write KENNEDY VALVE MFG. CO., ELMIRA, N. Y.

Odor Control Chemicals

281 A guide for the application of Alamask chemicals in the control of sewage odors is available from RHODIA INC., 60 E. 56TH ST., NEW YORK 22, N. Y. The brochure contains a treatment flow diagram, indicating the various sections of the plant where odor control may be practiced.

Truck Equipment and Construction Machinery

282 Product line bulletins giving features, specifications and other pertinent data on hoists, dump bodies, refuse collection bodies, ditchers, excavators, graders, spreaders and tractor equipment can be obtained from GAR WOOD INDUSTRIES, INC., WAYNE, MICH.

Snow Removal Equipment

283 Keeping streets free of snow and ice can be merely routine this winter, if you have the proper equipment. You can obtain, without obligation, information on a complete line of rugged snow fighting equipment (material spreaders, snow plows, ice blades) from WAUSAU IRON WORKS, WAUSAU, WIS.

Self-Propelled and Tow-Type Rollers

284 A set of bulletins received from TAMPO MFG. CO., 1146 W. LAUREL ST., SAN ANTONIO 7, TEXAS, describes various types of compacting equipment: a new 4-wheel, 50-ton compactor, a sheep's foot roller with independent drum oscillation, vibratory rollers, a variable weight roller, and one designed especially for difficult compaction jobs.

Street Lighting Information

285 A leading manufacturer of davit-type poles for outdoor lighting applications offers full facts on up-to-date street lighting in the form of *Booklet* OTA. For a copy, write MILLERBERND MFG. CO., WINSTED, MINN.

Keep Water Intakes Free of Debris

286 An illustrated booklet describes the installation, operation and advantages of power-operated mechanical rakes designed to operate in channel guides for maximum cleaning of racks at water intakes. It can be obtained from NEWPORT NEWS SHIPBUILDING AND DRY DOCK COMPANY, NEWPORT NEWS, VA.

Water, Sewage Analyzing Equipment

287 *Catalog* No. 62 gives 116 pages of information on instruments, testing outfits, glassware and reagents for public health, water and industrial laboratories. Of particular interest to municipal officials will be those new and improved products for water and sewage analysis. Write HELLIGE, INC., 877 STEWART AVE., GARDEN CITY, N. Y.

Plastic Sewer and Drain Pipe

288 A hubbed sewer pipe (Pi-Mar S) and a hubbed perforated drain pipe (Pi-Mar D), both made of high-density polyethylene, are unique in that the hubbing is an integral part of the pipe. This eliminates the need for a separate coupling. For full facts and specifications, write PYRAMID INSTRUMENTS, INC., ERIE, PA.

Time Clocks, Time Stamps

289 Widely used in municipalities of all sizes, these time recorders, daters, time stamps and watchman clocks help eliminate time leaks and increase efficiency of city departments. Descriptive literature gives complete information. Write LATHEM TIME RECORDER CO., 82 THIRD ST., N.W., ATLANTA, GA.

Unit-Designed Backhoe and Loader

290 Descriptive literature emphasizes that the Marauder is not a tractor with attachments, but an integral digging and loading unit with 4500-pound lift capacity, 5,000-pound breakout, and able to dig 12½ feet deep in any position of its 190° swing. The 4-wheel drive prime mover is capable of speeds from 0 to 25 mph. For details, write OTTAWA STEEL DIV., YOUNG SPRING & WIRE CORP., OTTAWA, KANS.

Modular Constructed Water Treatment Facilities

291 These treatment plants are available in unit sizes of from 1 mgd to 5 mgd. Flocculation, clarification and filtration equipment are combined in modular units and sized to meet specific municipal requirements and can be furnished with automatic controls. For complete information, write HARDINGE COMPANY, INC., 240 ARCH ST., YORK, PA.

Cast Iron Pipe

292 Flow characteristics, corrosion resistance, beam strength, joints and ease of tapping are some of the many points covered in a discussion of cast iron pipe as a water carrier in literature available from CAST IRON PIPE RESEARCH ASSOCIATION, 3440 PRUDENTIAL PLAZA, CHICAGO 1, ILL.

Snow Plow Wearing Parts and Blades

293 Shoes, nose pieces, wear plates, adapter brackets, plow and wing blades for every make and model of snow plow equipment are included in a new line of ForgeTemp roll-forged snow plow wearing parts and blades, designed with high resistance to impact and abrasion. For literature, write BUCYRUS BLADES, INC., BUCYRUS, OHIO.

All-Purpose Spreader for Ice Control

294 This double-auger, body-type spreader is designed to help you cover more miles of icy winter pavement. Spreading of salt, sand, cinders or mixtures is cab-controlled. A helpful standard feature is its easily read material application rate table for various materials at various speeds. For details on "Big Scottie," write TARRANT MFG. CO., 23 JUMEL PLACE, SARATOGA SPRINGS, N. Y.

Plastic Pipe and Fittings

295 Because plastic pipe and fittings are comparatively recent arrivals and because there are many different kinds for many different applications, the makers of Uscolite plastic pipe offers a guide to types and their uses, and welcomes all questions. Write MECHANICAL GOODS DIVISION, UNITED STATES RUBBER, ROCKEFELLER CENTER, NEW YORK 20, N. Y.

Smallest Two-Way Radio Has "Drainless" Battery

296 G-E offers a transistorized 2-way radio in sizes up to 75 watts, which on standby uses only 0.04 ampere. The 10-watt size is a foot long, 8⅝" wide and 4" high. For details, write GENERAL ELECTRIC CO., COMMUNICATION PRODUCTS DEPT., SECTION 1879-199, MOUNTAIN VIEW RD., LYNCHBURG, VA.

Steel Swimming Pools

297 *Bulletin* 59 SW illustrates and describes a complete line of all-steel swimming pools designed and constructed according to the modular principle. Features of economy, installation and flexibility are discussed and hints on planning a community pool given. For a copy, write HAMMOND IRON WORKS, SWIMMING POOL DIVISION, WARREN, PA.

Better Sewer Cleaning

298 Cleaning municipal sewers a problem? Then you'll be interested in an improved method of sewer cleaning that will enable you to run a preventive maintenance program, take care of emergencies, and reduce sewer cleaning costs 50% to 75%. For facts and details on a complete line of automatic, all-power sewer cleaners, write O'BRIEN MFG. CORP., 5632 NORTHWEST HIGHWAY, CHICAGO 46, ILL.

Electric Generating Plants

299 Electric plants for emergency service and for supplying power for power tools, construction jobs, floodlighting, sound equipment and fire fighting are the subject of a series of specification sheets obtainable from GENERAL ELECTRONIC SERVICE CORP., P. O. Box 9, BURLINGTON, WIS.

Concrete and Masonry Equipment

300 If you are seeking reliable information on hot pour and cold applied joint sealers, concrete and masonry saws and blades, and Diamond core bits, write CLIPPER MANUFACTURING CO., SUITE 102, KANSAS CITY 8, MO. It will provide you with full facts and figures.

(See page 58 for more Bulletins)

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BUSINESS REPLY CARD
FIRST CLASS PERMIT No. 281, SEC. 34.9 P. L. & R., NEW YORK, N. Y.

THE AMERICAN CITY MAGAZINE
470 FOURTH AVENUE
NEW YORK 16, N. Y.

STUCK?

If you need information on any type of municipal service or equipment, these reply cards will get action in a hurry.

To THE AMERICAN CITY's Catalog Supply Department:
Please send me literature on items numbered as follows, starting on page 42

231	243	255	267	279	291	303	315	327	339	351	363
232	244	256	268	280	292	304	316	328	340	352	364
233	245	257	269	281	293	305	317	329	341	353	365
234	246	258	270	282	294	306	318	330	342	354	366
235	247	259	271	283	295	307	319	331	343	355	
236	248	260	272	284	296	308	320	332	344	356	
237	249	261	273	285	297	309	321	333	345	357	
238	250	262	274	286	298	310	322	334	346	358	
239	251	263	275	287	299	311	323	335	347	359	
240	252	264	276	288	300	312	324	336	348	360	
241	253	265	277	289	301	313	325	337	349	361	
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A Listing of Your Business Connection is Important 9-59

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Please send me further information on products described in "Purchasing News" section beginning on page 263, as circled below:

911	916	921	926	931	936	941	946
912	917	922	927	932	937	942	947
913	918	923	928	933	938	943	948
914	919	924	929	934	939	944	949
915	920	925	930	935	940	945	950

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..... 9-59

A Listing of Your Business Connection Is Important

HERE'S A LIFT

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BUSINESS REPLY CARD

FIRST CLASS PERMIT No. 281, SEC. 34.9 P. L. & R., NEW YORK, N. Y.

THE AMERICAN CITY MAGAZINE

470 FOURTH AVENUE

NEW YORK 16, N. Y.

Save time and effort by using these reply cards when you want additional information on any product or service mentioned or advertised in this issue.

Protect against accidents like this!

Use straight Morton Rock Salt—the most effective way to help keep streets, freeways and tollroads safer in winter

Straight Morton Rock Salt does the job abrasives and Salt mixed with abrasives can't do to help prevent accidents caused by ice and snow. Morton Rock Salt gives *abrasive traction* against skidding even before the salt starts to melt the ice. Rock Salt crystals are larger than other commonly used ice melting chemicals and *penetrate ice deeper* with a corkscrew action—not just melt surface ice. Due to Rock Salt's better penetration, it reaches the pavement fast and quickly *melts* the bond between ice and the street surface.

Morton Rock Salt is safe, clean, economical

Straight Morton Rock Salt is non-toxic. It does not damage animals' paws, rubber, fabrics, leather, asphalt, brick or properly seasoned concrete. It will not clog sewers or leave a rutted, dirty pavement as will sand or cinders. What's more, Rock Salt melts *more ice at lower cost* at any temperature above 8° F. than any other commonly used ice melting chemical.

Send for more information today!

☐ Please send me your free book on ice and snow removal.

☐ I would like a Morton representative to advise me on how best to stockpile Morton Rock Salt.

Name_____

Title_____

Address_____

City_____ Zone____ State_____

MORTON SALT COMPANY

INDUSTRIAL DIVISION

Dept. AC-9, 110 No. Wacker Drive, Chicago 6, Illinois

FREE catalogs

Write directly to the address given or use the Post Card on page 55.

Traffic Markers

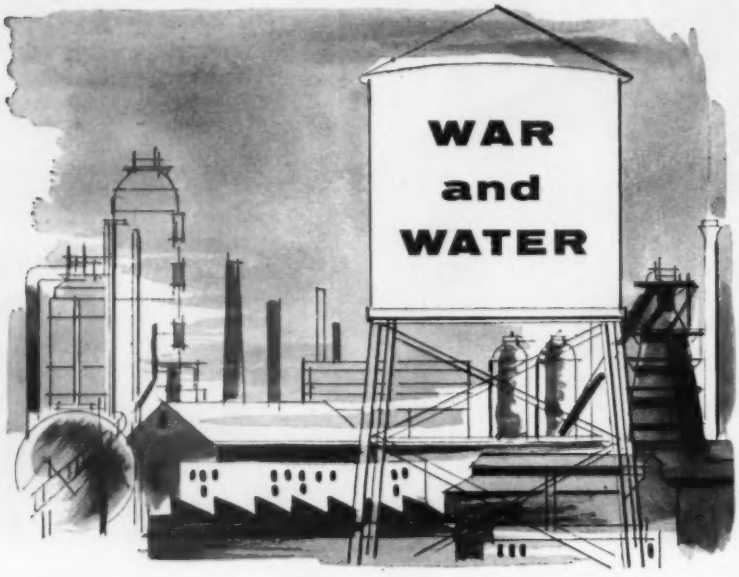
301 These flexible, rubber compound traffic markers help maintain even vehicle flow. If struck, they sound a warning, but do not damage vehicles. Use of Federal yellow molded into the top 5" of these 12" markers assures excellent visibility. For descriptive literature, write PYLACON, INC., 48 N. WESTWOOD AVE., TOLEDO, OHIO.

Traffic and Outdoor Lighting Standards

302 To obtain free, up-to-date information on steel and aluminum standards for street lighting and traffic applications, write DEPT. A-9, KERRIGAN IRON WORKS CO., NASHVILLE, TENN. Catalogs give full facts and descriptions.

Long-Wearing Pavement Markings

303 Perma-Line markings bind to become part of the pavement. Color-fast and fast-drying, they are guaranteed to last up to eight times longer than paint, and when applied by a Permamatic-Liner, can be put down more than 12 times faster than with similar applicators. For descriptive literature, write VEON CHEMICAL CORP., 22-09 BRIDGE PLAZA NORTH, LONG ISLAND CITY, N. Y.

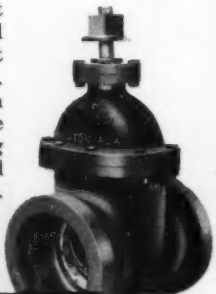


Domestic uses amount to only about 3% of U. S. annual water consumption.

During "cold" war maneuvers and real war rumors, it is well to remember that industrial water is a basic resource in national preparedness and in war. Entirely apart from human needs, without industrial water supply there could be little or no production of war materials.

Industrial production requires over 5 billion gallons of water daily. Inadequate water supply could cripple or kill industrial operations as they can knock out a man. The basic materials used to make aircraft may be metals, but the metals themselves could not be produced without the use of water. It takes 150 tons of water to make 1 ton of steel.

When you see a military airplane soar through the air, or read of the latest missile shot to the moon—remember that behind the scenes, unsung and perhaps unknown, were the engineers and management of a modern water works system.



This Series is an attempt to put into words some appreciation of the water works men of the United States.

M&H VALVE
AND FITTINGS COMPANY
ANNISTON, ALABAMA
SUBSIDIARY OF WALWORTH

Converts Salt Water to Fresh Water

304 A pioneer developer and builder of electrodialysis water desalting plants announces a prototype unit incorporating greatly improved hydraulic and electrical characteristics. Maximum capacity is 65,000 gallons per day when removing about 40% of dissolved solids in feed water. For literature and application details, write IONICS, INC., 152 SIXTH ST., CAMBRIDGE 42, MASS.

All-New Tractor Shovel

305 New literature from MASSEY-FERGUSON INDUSTRIAL DIVISION, BLOCK 1000 SOUTH WEST ST., WICHITA 13N, KANS., highlights the 406, a tractor shovel with low-thrust point, high reach, and integrated attachments that increase versatility and productivity. The unit is instant reversing, gives the operator all-around visibility, and is highly maneuverable.

Records Turbidity of Water

306 Low- and high-range continuous reading-recording turbidimeters, recommended, respectively, for monitoring effluent from water filters, and for monitoring surface waters and measuring turbidity of effluent from settling basins in water treatment plants, are described and illustrated in literature offered by HACH CHEMICAL CO., AMES, IA.

Keeps Sewers Free-Flowing

307 Sanfax 222, a power-packed chemical, burns out tree roots, trash and impediments in sewers. It is said to reduce labor and maintenance costs and increase sewer line efficiency. It can be used on a preventive maintenance basis. For details, write THE SANFAX CO., P. O. BOX 604, ATLANTA, GA.

Parking Meter Collection System

308 A fast, safe, easy method of collecting coins from parking meters, adaptable for use with "Mark-Time" meters, is announced by M. H. RHODES, INC., HARTFORD, CONN. Write for Stereo demonstration with viewer and set of color photos of the 2-second collection system in action; also for the booklet, "Better Parking Means Better Business."

Waterproof Asphalt Linings

309 The experience of cities and industry in controlling seepage and erosion on reservoirs, irrigation ditches, salt water and waste-chemical pits with these prefabricated asphalt linings are documented in an *Engineering Brochure* (4th edition) published by GULF-SEAL CORP., DIVISION OF BRAMBLE INDUSTRIES, HOUSTON 2, TEXAS

Automatic Valves

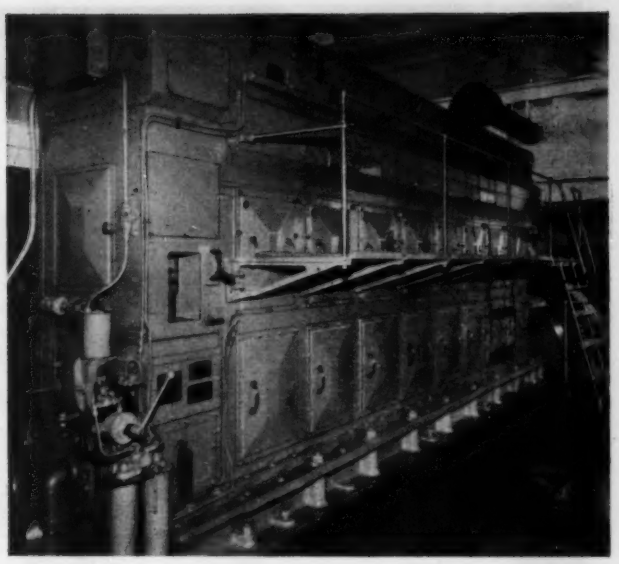
310 Up-to-date information on the complete line of Clayton valves can be obtained from the latest *General Catalog* and bulletins that individually describe each unit. Included are rate of flow controllers, pressure relief and reducing valves, backflow preventers, check, solenoid, pump control, float vacuum relief and remote control valves. For literature, write CLA-VAL CO., 17TH & PLACENTIA ST., NEWPORT BEACH, CALIF.

Radioactivity Monitoring Systems

311 A 16-page brochure describes monitoring systems for detecting and recording radioactivity. *Bulletin* M-59 is offered by NUCLEAR MEASUREMENTS CORP., 2460 N. ARLINGTON AVE., INDIANAPOLIS 18, IND., and includes seven particulate monitoring systems, five detectors, a portable air and area monitor, and a diagram of a typical remote monitoring system for a reactor site.

(See page 62 for more Bulletins)

over 15 KWH per gallon



** Superior 80-SX-8 Diesel at Princeton, Missouri, produces 15-25% more power per gallon fuel oil than comparable engine-generators!*

For the past three years, Consumers Public Service Company of Brookfield, Mo., has achieved remarkable fuel economy with a White Superior Model 80-SX-8 engine-generator package installed at Princeton. The Superior is rated 1440 HP at 360 RPM and drives a generator of 1000 KW capacity. This dependable combination produces over 15 KWH of electricity per gallon of fuel oil, which is 15-25% more power per gallon than comparable engine-generators commonly produce!

Superior's highly developed open chamber combustion system and a competitively-aimed series of exclusive design developments and refinements account for this thrifty performance. Moreover, the high KWH/gallon will remain consistent, because Superior is a rugged, heavy-duty, low-speed engine. It will not eventually "loosen up"—like lightweight, high-speed engines often do—causing a gradual drop in power output per gallon. Superior's economical operation goes far beyond fuel savings, too. Extreme design simplicity eliminates high mortality parts . . . means fewer replacement parts required, reducing maintenance and repair to a minimum.

Model 60 and 80 Stationary Diesels, six or eight cylinder, can be furnished as diesel, dual-fuel or gas engines. They are one segment of a complete line of Superior engines ranging from 190 to 2150 HP, or 150 to 1500 KW. White can custom-engineer a Superior to your exact requirements and apply its extensive experience with automatic, unattended and remote control operations to your problem!

Superior ENGINES · ATLAS Imperial DIESEL ENGINES · White DIESEL

White Diesel

WHITE DIESEL ENGINE DIVISION
THE WHITE MOTOR COMPANY
Plant and General Offices: Springfield, Ohio

Only from GAR WOOD... BIG

Gar Wood Pax-all Refuse Containers snap quickly on or off the new Load Packer 600 without use of chains or cables. Complete hydraulic operation is controlled with one lever.

Always specify GAR WOOD for greatest equipment operating

GAR WOOD's rugged ¾ yard machine gives you bonus capacity for excavating and material handling. Independent travel lets operator hoist or swing while moving... built-in chain crowd puts full engine power into every bite, simplifies conversion.

GAR WOOD - ST. PAUL hoists and bodies deliver longer, dependable service with a minimum of maintenance. The rugged yet precision hydraulic system handles controlled dumping smoothly, quickly, accurately ... under the toughest conditions.

SIX Performance

with the NEW LOAD-PACKER® 600

Only from BIG SIX performance of the new Load Packer 600 can you get advanced engineering features that insure lowest operating and maintenance costs... faster, more productive time... years of extra service.

Exclusive BIG SIX performance features of the new Load Packer 600 out-match any other equipment in these six important ways...

1. **FASTEST OPERATION**—Crew starts reloading in just 4 seconds... full cycle takes only 10 seconds. More speed means better service.
2. **GREATEST COMPACTION**—Direct thrust compaction packs more per yard than any competitive unit.
3. **BIGGEST LEGAL PAYLOADS**—Minimum dead weight. Front-mounted telescopic hoist eliminates the need for heavy, conventional hoist sub-frames. Result: less weight and greatly improved weight distribution.
4. **LARGEST, LOWEST HOPPER**—Big 1½ cubic yard, 74" wide hopper, plus low loading height speeds collection, makes crew's job easier. Three crewmen can load simultaneously.
5. **SAFEST, MOST DEPENDABLE OPERATION**—Controls are simple, foolproof. Operator has positive control, can stop mechanism instantly. Engineered for less maintenance with fewer moving parts, less linkage, fewer adjustments.
6. **GREATEST ECONOMY**—Big hopper, fastest loading cycle means less fuel consumption... less wear and tear on packer, chassis and engine.

The new Load Packer 600 is first with every feature that counts! Get the complete 600 story from your Gar Wood-St. Paul truck equipment distributor.

and maintenance economy

GAR WOOD-BUCKEYE wheel- and ladder-type ditchers offer modern features like these as standard equipment at no extra cost: hydraulic conveyor drive, hydraulic digging wheel hoist, modern power train and simplified group controls.

Gar Wood
INDUSTRIES, INC.
Wayne, Michigan

Plants in Wayne and Ypsilanti, Michigan • Findlay, Ohio
Mattoon, Illinois • Richmond, California • Exeter, Penna.

There's no waste water from a V-notch

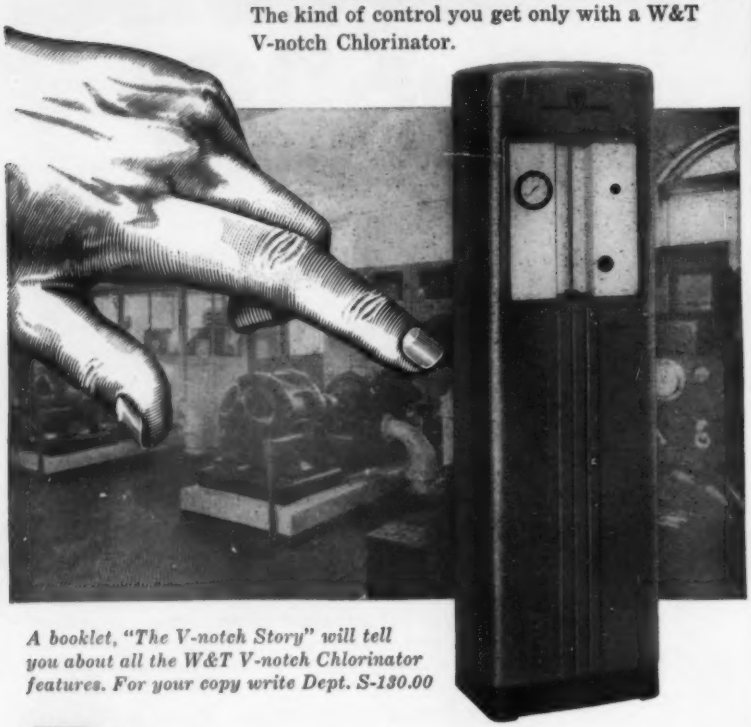
Why?

Because a V-notch Chlorinator needs no auxiliary water supply.

You can plan on clean, dry chlorinator rooms with no messy drain—no chlorine gassing back. And best of all... gone forever is the high cost of wasted auxiliary water.

And, of course, the right plastics make the whole chlorinator chlorine-proof.

Yet these are just added benefits to the main job: Simple, dependable, wide range chlorine control. The kind of control you get only with a W&T V-notch Chlorinator.



A booklet, "The V-notch Story" will tell you about all the W&T V-notch Chlorinator features. For your copy write Dept. S-130.00

WALLACE & TIERNAN INCORPORATED
25 MAIN STREET, BELLEVILLE 9, NEW JERSEY

is your feeding problem peculiar to your operation?

Wallace and Tiernan's volumetric feeders are so flexible that each job is practically custom built. W&T's experience is broad enough to meet any challenge.

Try us - for information write Dept. MV-1.00

WALLACE & TIERNAN INCORPORATED
25 MAIN STREET, BELLEVILLE 9, NEW JERSEY

FREE catalogs

Write directly to the address given or use the Post Card on page 55.

Rugged Air Compressors

312 Designed to deliver more air for less money, these dependable compact units are easy to maintain and are built to stand up under all conditions. Three models (125 cfm, 75 cfm and 45 cfm), both stationary and portable, are discussed in literature available from GORDON SMITH & COMPANY, INC., 425 COLLEGE ST., BOWLING GREEN, KY.

For Faster, More Economical Snow Removal

313 Snow removal can be accomplished more quickly and with less effort when snow plows are lifted and lowered automatically from inside the cab. An illustrated folder on hydraulic power controls that assure dependable snow plow action, write MONARCH ROAD MACHINERY CO., 1331 MICHIGAN ST., N.E., GRAND RAPIDS 3, MICH.

Hydraulic Pipe Bender

314 On-the-spot bends in conduit or steel, aluminum and stainless steel pipe are made quickly and easily with this hydraulic bender, capable of making a full 90° bend with one ram stroke, one setting. Three models are described in literature, available from GREENLEE TOOL CO., 1770 COLUMBIA AVE., ROCKFORD, ILL.

Torpedo-Shaped Waste Receptacles

For an-up-to-date catalog on a complete line of attractive waste receptacles, designed for both indoor and outdoor use, write THE F. H. LAWSON CO., CINCINNATI 4, OHIO. Units are steel bodied, feature a self-closing push door, and have galvanized inner containers and bonderized outer shells. Finish is baked enamel.

Gathers Litter Economically from Turf Areas

316 Grass clippings, papers, cans, bottles, twigs, leaves and other trash are gathered in a 45" swath and at the rate of 5 miles per hour by the Litterlift, which bags trash in a reusable bag. For descriptive literature and application details, write LITTERLIFT CORP., OLATHE, KANS.

75 CFM Portable Air Compressor

317 The newest rotary in the Le Roi line of rotary compressors is Model 75RG1, a single-stage, sliding vane-type gasoline-driven unit rated at 75 cfm and featuring a rust-proof "flip-top" aluminum housing. For further information, request *Form*-124 from SALES PROMOTION DEPT., LE ROI DIVISION, WESTINGHOUSE AIR BRAKE CO., MILWAUKEE 1, WIS.

Suppress Engine Noise in Municipal Power Plants

318 These vertical and horizontal heat recovery silencers provide the optimum in noise suppression while efficiently capturing waste heat from diesel engine exhausts and pre-heating fuel at virtually no cost. Literature, available from EMHART MFG. CO., MAXIM DIVISION, BOX 216, HARTFORD 1, CONN., discusses a complete line for a wide range of conditions and with varying capacities.

(See page 65 for more Bulletins)

MUELLER®

PLANT VALVES

ideal for use in:

WATER FILTRATION PLANTS
SEWAGE TREATMENT PLANTS
PUMPING STATIONS • INDUSTRIAL PLANTS
POWER PLANTS • DRAINAGE PROJECTS
FLOOD CONTROL PROJECTS

NEW! HEAVY DUTY CHECK VALVES

. . . specifically designed to reduce wear caused by repeated opening and closing when used in such installations as pump suction or discharge lines. All working parts are heavily constructed from high-strength materials to assure long, dependable operation without maintenance. Suitable for vertical or horizontal use. Swing type, Swing type with Lever and Weight, and Swing type with Lever and Spring available.

Iron body, fully bronze mounted
Bronze seat ring
Bronze disc ring or rubber faced disc
Flanged, screwed or hub ends
Working pressure: 175 p.s.i.
Test pressure: 300 p.s.i.

FLAP VALVES

. . . for use where flow is desired in one direction only and to the atmosphere; for example, a river levee installation. The area behind the levee would drain into the river only when the river was low and below the flap valve. A higher level of the river would seal the valve.

Iron body, fully bronze mounted
Bronze seat ring, disc ring and hinge pin
Flanged, hub or spigot frame
Sizes: 4" through 24"

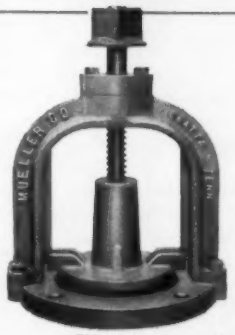
SHEAR GATES

. . . for use in any application where one side of the valve is open to the atmosphere and manual operation is desired. Design permits full opening of gate with no obstruction of orifice. Slight wedging action gives positive seal when closed. Flow may be in either direction. Furnished with lift handle and catch.

Iron body, fully bronze mounted
Bronze seat ring, disc ring and hinge pin
Flanged, hub or spigot frame
Sizes: 4" through 24"

MUD VALVES

. . . usually used for draining tanks or reservoirs by mounting in floor. Non-rising stem or self-contained rising stem type available. Normally furnished with 2" square wrench nut but handwheel, extension stem or extension stem and floor stand may be specified.



Iron body, fully bronze mounted
Bronze seat ring, disc ring and stem
Flanged or spigot frame
Non-rising stem sizes: 3" through 24"
Rising stem sizes: 4" through 18"

VALVE OPERATING EQUIPMENT

A full line of extension stems, floor stands, bench stands, geared floor stands, chain and sprocket wheels, wrenches and other valve operating equipment and accessories are available for valve installations requiring operating mechanisms.

Write for complete information and specifications.

MUELLER CO.
DECATUR, ILL.

Factories at: Decatur, Chattanooga, Los Angeles;
In Canada: Mueller, Limited, Sarnia, Ontario.

USCOLITE PLASTIC PIPE

CONFUSED ABOUT PLASTIC PIPE?

(MOST EVERYONE IS)

Here's your guide:

U. S. Uscolite® CP acrylonitrile-butadiene-styrene copolymer (ABS-I) pipe is best where maximum resistance to impact is demanded. It will safely handle most chemicals of industrial importance at working temperatures up to 170°F. This is the major plastic pipe used by chemical processing industries.

U. S. Uscolite RV polyvinyl chloride (PVC-I) pipe is best for extremely active oxidizing agents such as strong sulphuric, nitric and chromic acids. This unplasticized, unmodified Type I PVC has high impact strength and handles temperatures up to 140°F, far in excess of normal requirements.

Uscolite HT (ABS-II) pipe is a new addition to the resin-rubber compounds. HT stands for exceptionally High Tensile qualities, plus much better retention of physical properties at High Temperatures.

These types of Uscolite Pipe cover all requirements, not only because they are virtually immune to internal and external corrosion, but they are non-contaminating, odorless, impart no taste or discoloration. Because of these qualities they are approved by the National Sanitation Foundation for carrying drinking water. The use of Uscolite results in a saving of appreciable dollars in installation costs and reduction in man-hours. The skills to install metal pipe are not required to install Uscolite. Assembly can be accomplished in half the time. *Not one foot of Uscolite Pipe has ever failed in service when used in accordance with our recommendations.*

A fourth pipe, *UscoFlow HT (ABS-II)* is a black utility pipe, especially suitable where low first costs are a factor. It's a blend of styrene-base resin and synthetic rubber for good impact resistance and high tensile strength. UscoFlow is the ideal answer to builders and large developers who are seeking long-lived, maintenance-free pipe for plumbing.

We invite detailed inquiries or call your "U. S." plastics distributor. He has the *largest* line of plastic pipe and fittings, plus an experienced background to settle any and all questions about which pipe to use.

Mechanical Goods Division

United States Rubber

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N.Y. In Canada: Dominion Rubber Company, Ltd.

FREE catalogs

Write directly to the address given or use the Post Card on page 55.

Highway Lighting Standards and Sign Supports

319 If highways are your business, then you will be particularly interested in descriptive literature that catalogs Monotube lighting and floodlighting poles, sign supports, traffic-signal poles and sign poles, transmission towers and foundation piles. For copies, write THE UNION METAL MANUFACTURING CO., CANTON 5, OHIO.

Helicopters for Municipal Service

320 Traffic patrol, crime detection and control, fire prevention are a few of the hundred ways in which municipalities employ helicopters. A matching funds plan now enables cities to purchase a helicopter by making a capital outlay of only half the purchase price. For full facts, write BELL HELICOPTER CORP., DEPT. 14 I, FORT WORTH, TEXAS.

Prestressed Concrete Water Tanks

321 In discussing prestressed concrete tanks for water storage service, *Bulletin* T-22 mentions that 75% of tank construction costs can be spent locally, and that once erected, these tanks have long service life and require no maintenance. To learn of other advantages, write THE PRELOAD COMPANY, INC., 211 E. 37TH ST., NEW YORK 16, N. Y.

Long-Distance Hazard Warning

322 Equipped with traffic signal size 8" lens and highly polished parabolic reflector, the 12-volt 680 Visi-flash beams 650 hours of warnings over longer distances, to give drivers on high-speed highways the lead-time needed to slow down for dangerous hazards. For literature and full line hazard warning catalog, write R. E. DIETZ CO., 100 LEAVENWORTH AVE., SYRACUSE 1, N. Y.

Self-Propelled Traffic Line Striper

323 The Model 9000 one-man operated Mark-Rite traffic line marker is reported to lay 25% to 50% more line per day than other machines. It stripes 1, 2, or 3 lines solid or skip simultaneously, one or two colors, in widths from 2" to 6". Accessories permit its use for spray painting, insect and weed control spraying. For literature, write UNIMASCO, INC., 424 WEST REDONDO BEACH BLVD., GARDENA, CALIF.

Carries the Human Voice Over 1 Mile of Land or Water

324 High-powered transistorized "Mighty-Mike" is suitable for police work, firefighters, schools and construction crews. It is self-contained and compact, and is rated at 30 watts power, about three times that of other portable amplifiers. For descriptive literature, write BELL & GUSTUS, INC., 4328 N. ELSTON AVE., CHICAGO 41, ILL.

Traffic Marking in Plastic

325 A new extruded strip for traffic marking, furnished with an adhesive backing and easily cut to length, is edge tapered to prevent scuffing. Reflectorized, it comes in many colors, with black, red, yellow and white standard, in three widths (3", 4", 6") and in two thicknesses (.040 for parking lots and .070 for street and highway applications). For literature, write AUBURN PLASTICS, INC., AUBURN, N. Y.

Rotary Lawn Mowers

326 These large-capacity, tractor-drawn rotary cutters operate with economy and dependability. They are ideal for use on large, unobstructed lawn areas. For full facts and figures, write LILLISTON IMPLEMENT CO., ALBANY, GA.

Improved Street Sweeper

327 Safe, mobile and maneuverable, this clean-sweeping street sweeper features an improved rubber sprocket dirt elevator that performs better, is less costly to replace and is guaranteed for 6,000 miles. The new dirt elevator is available in kit form for installation on older Mobil Sweepers. For illustrated brochure and full economy record, write MOBIL SWEEPER DIVISION of the CONVEYOR CO., DEPT. AC-8, 3260 E. SLAUSON AVE., LOS ANGELES 58, CALIF.

Steel Water Pipe

328 A new and informative bulletin from SMITH-SCOTT CO., INC., gives specifications, description and application data of hi-Flo steel water pipe for severe, normal and mild operating conditions. For a copy of *Bulletin* No. 100-A, write the company at P. O. BOX 3033, RIVERSIDE, CALIF.

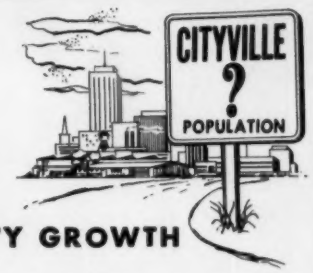
Sturdy Steel Fence

329 In addition to being strong and serviceable, this attractive steel fencing material is highly resistant to both fire and impact. For complete information on its ability to stand up under adverse conditions, write CYCLONE FENCE, AMERICAN STEEL & WIRE, DEPT. B-99, 614 SUPERIOR AVE., N.W., CLEVELAND 13, OHIO.

(See page 66 for more Bulletins)

IT TAKES AN

O'Brien Sewerking®



TO KEEP PACE WITH CITY GROWTH

• More homes, more industry, more schools and institutions... no wonder the growing town has a sewer cleaning headache! The remedy is a high performance O'BRIEN SEWERKING — the all-power, automatic sewer cleaner that will fit your needs of today *and tomorrow!* One man can set up and operate a SEWERKING. You'll be amazed when you see it demonstrated!

It's the revolutionary improved way to clean sewers that will enable you to run a proper maintenance program, take care of any emergency promptly, and reduce costs 50%—75%! Let us refer you to cities and towns, coast to coast, for whom an O'BRIEN SEWERKING has proved to be indispensable!

THE NEW "800"— for long distance cleaning, manhole to manhole. Ideal for threading for buckets.

PATENTED

• See the SEWERKING line of automatic, all-power sewer cleaners.

• *Visit booths C52-3 Public Works Congress and Equipment Show, Seattle, Washington Sept. 20-23.*

FREE CATALOG! MAIL COUPON

O'BRIEN MANUFACTURING CORPORATION
5632 Northwest Highway • Chicago 46, Ill. DATE_____

OK—O'BRIEN... send us the facts and the SEWERKING CATALOG.

CITY_____ STATE_____

STREET_____

SIGNED BY_____

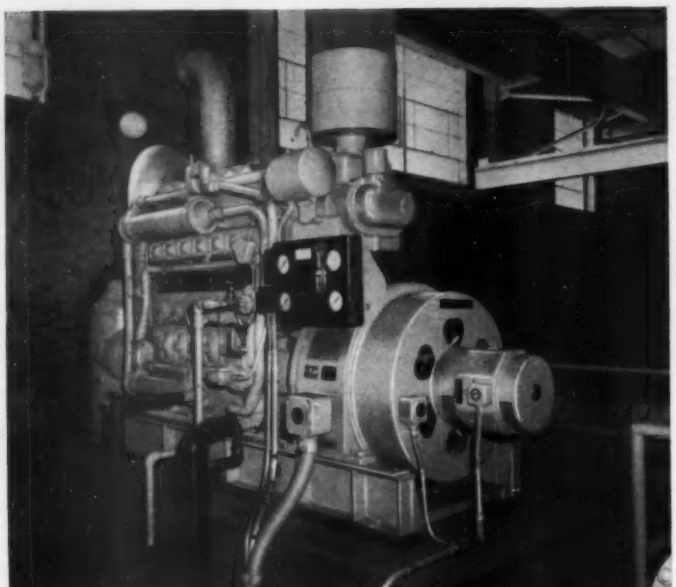
TITLE_____ DEPT._____

AC-9-59

O'Brien MANUFACTURING CORP.
5632 Northwest Highway
Chicago 46, Illinois
Phone ROdney 3-7433

Picture of O-P economy!

Ohio pumping station saves $300 a month using F-M Opposed-Piston standby diesel for both power generation and pumping



Compact, lightweight Model 38F5¼ O-P is rated 450 hp. at 1200 rpm., direct drives a 175-kw. F-M alternator and, through right-angle gears, an F-M Pomona Vertical Turbine Pump with 5.5 mgd. capacity at discharge pressure of 105 psi.

Electric power off the flywheel end, high-service pumping off the front—that's the standby job cut out for this Model 38F5¼ Fairbanks-Morse O-P Diesel in the Elyria, Ohio water works serving 60,000 people.

Called into service for 3 to 6 hours a day in the Spring of 1958, the O-P pumped water for $1.50 less per million gallons than purchased power—a $300 per month reduction, including savings on demand charges. Each Saturday the engine makes a test run as the sole high-service on the line.

Versatile as well as economical, the Model 38F5¼ O-P is also ideal for direct-driving other equipment off the rear, with front end of shaft driving an auxiliary generator, crusher, pump, etc. The O-P can be furnished for either diesel, dual-fuel, or spark-ignited operation, and is available as a complete packaged unit with all accessories attached to the frame. Write Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.

FAIRBANKS-MORSE

a name worth remembering when you want the BEST

DIESEL, DUAL FUEL AND GAS ENGINES • LOCOMOTIVES • ELECTRIC MOTORS • GENERATORS
PUMPS • SCALES • COMPRESSORS • MAGNETOS • HOME WATER SYSTEMS

CATALOGS *for Improved Municipal Services*

Write directly to the address given or use the Post Card on page 55.

Fun-Inviting Recreation Facilities

330 A complete catalog of rides—miniature trains, merry-go-rounds, etc.—that will increase the popularity of your park's recreational facilities and add to revenue can be obtained by writing to PARK DEPT., ALLAN HERSCHELL CO., INC. and MINIATURE TRAIN CO., NORTH TONAWANDA, N. Y.

Rotary Mowers

331 The features and capabilities of 30 models of tractor-powered rotary mowers, designed to quickly and economically expedite grounds maintenance jobs of mowing, leaf mulching and weed control, are described in illustrated literature, available from WOOD BROTHERS MFG. CO., 54909 S. 4TH ST., OREGON, ILL.

Drainage Gates

332 A complete line of sluice, flap, roller, radial, light-duty slide, turnout and meter gates are described in the Armco *Gate Catalog*, available upon request to ARMCO DRAINAGE & METAL PRODUCTS, INC., 7679 CURTIS ST., MIDDLETOWN, OHIO.

Dependable Electric Power

333 Full information on totally dependable diesel, dual-fuel, tri-fuel and spark-ignited gas engines from 73 hp to 7703 hp is given in literature that can be obtained from ENTERPRISE ENGINE & MACHINERY CO., 18TH and FLORIDA STS., SAN FRANCISCO 10, CALIF.

Digging and Rehandling Buckets

334 A complete line of orange peel buckets — standard, heavy, multi-power, and three blade—are cataloged in an illustrated bulletin that gives application and full description, including weights and dimensions. For a copy, write THE HAYWARD COMPANY, 50 CHURCH ST., DEPT. A, NEW YORK 7, N. Y.

For Better Reflectorized Traffic Signs

335 Test and specification data, application procedures, and other helpful information on reflective glass bead products that bring greater safety and economy to traffic, directional and street signs are given in a booklet offered by FLEX-O-LITE MFG. CORP., 8301 FLEX-O-LITE DRIVE, P. O. BOX 3066, AFTON BRANCH, ST. LOUIS 23, MO.

Reduce Municipal Clean-Up Costs

336 The new Superior waste receptacles are cataloged in literature available from JOHN WOOD CO., SUPERIOR METALWARE DIV., ST. PAUL, MINN. Standard models in sizes for all locations—parks, playgrounds, buildings, streets—are described, and construction details and colors available noted.

Year-Round Municipal Maintenance

337 Here is a machine that offers real job versatility on maintenance and construction assignments. Hydraulic attachments permit it to perform service as a buildozer, scarifier, lift-loader, berm leveler, snow plow, patch roller, broom and side dozer. For descriptive literature on the M-52 Maintainer, write HUBER-WARCO CO., MARION, OHIO.

(See page 68 for more Bulletins)

RUST-OLEUM®

STOPS RUST!®

and beautifies as it protects in many attractive

COLORS

Distinctive as your own fingerprint. Accept no substitute.

Why let rust mar your park and playground equipment? Rust-Oleum *Stops Rust!* – and beautifies swings, slides, merry-go-rounds, fences, receptacles, buildings, power equipment, etc. Easy to apply by brush or spray, and dries to a firm, decorative coating that resists sun, moisture, heat, fumes, rain, snow, and weathering! Your nearby Rust-Oleum distributor maintains complete Rust-Oleum stocks in all colors for prompt delivery. Clip coupon to your letterhead for complete information and FREE TEST SAMPLE of Rust-Oleum 769 Damp-Proof Red Primer, *today!*

ATTACH COUPON TO YOUR LETTERHEAD FOR FREE TEST SAMPLE

RUST-OLEUM CORPORATION
2676 Oakton Street—Evanston, Illinois

Gentlemen: Please send me a FREE TEST SAMPLE of Rust-Oleum 769 Damp-Proof Red Primer for application over sound rusted surfaces, and complete information on the following.

- ☐ New 36-page catalog showing Rust-Oleum colors and applications.
- ☐ 30-page Technical Report on Rust-Oleum fish oil vehicle penetration through rust to bare metal.
- ☐ Nearest source of supply.

MONEY SAVING *catalogs*

Write directly to the address given or use the Post Card on page 55.

25-KW Diesel Electric Plant

338 This completely self-contained engine-generator set (Series DZC) with water-cooled Hercules diesel engine, "Magneciter" generator and Onan controls, provides smooth-running, full-rated 25kw for both primary and emergency standby applications. For descriptive literature, write D. W. ONAN & SONS INC., 2515 UNIVERSITY AVE., S.E., MINNEAPOLIS 14, MINN.

Bell-Tite Pipe Joints

339 Cast iron pipe with Bell-Tite joints for working pressures up to 350 psi and available in diameters up to 24" is described in literature available from JAMES B. CLOW & SONS, INC., 201-299 N. TALMAN AVE., CHICAGO 80, ILL., which explains among other things why this pipe costs less to buy and install.

Chips Brush Fast

340 Minimum maintenance. Absolute safety. Bulk feeding area. Quick blade change. Telescoping draw bar. Easy towing. These are some of the points discussed about brush chippers in literature offered by ASPLUNDH CHIPPER CO., 501 YORKTOWN ROAD, JENKINTOWN, PA., manufacturers of what tests prove to be the fastest chippers made.

CHICAGO FIGHTS FIRES THE NEW WAY WITH HI-RANGER "SNORKEL"

Specially equipped with high pressure hoses and other equipment by the Chicago Fire Department, these 65 and 75 foot Hi-Ranger "Snorkels" respond to extra alarm fires and rescue operations . . . Save lives and millions in property damage.

Critical pinpoint control of operator's basket is attained easily and quickly with Hi-Ranger's unique "3-D" control. Single control provides reliable, positive movement in one, two or three dimensions simultaneously.

Hi-Rangers are available in reach ranges from 32 feet to giants at 100 feet which dwarf even the present fire fighting units.

GET COMPLETE DETAILS NOW

HI-RANGER "SNORKEL" *by Mobile Aerial Towers, Inc.*

1730 N. Harrison St. • Ft. Wayne, Ind.

New Traffic Island Light

341 Finished in traffic yellow, Guardlite beams an amber light in four directions. It is 9¾ inches tall and has a 58-pound head that fits securely over the top of the tapered base. Descriptive literature from BLACKHAWK INDUSTRIES, DUBUQUE, IA., states that it is available for a 110-volt system or a 6.6 ampere street series lighting, and can be equipped with flasher attachment.

Conveyor Sludge Collectors

342 *Bulletin* 315-61 illustrates the diversity of the Rex sludge collector line and outlines the basic styles for light, medium and heavy-duty installations. General information on tank and drive arrangements, skimming equipment and components are included. For a copy, write CHAIN BELT CO., SALES PROMOTION DEPT., 4648 W. GREENFIELD AVE., MILWAUKEE 1, WIS.

Filtration Plant Valves

343 Tight closure valves, designed specifically for filter drainage, rewash and backwash, and to provide both efficient and economical operation, are discussed in illustrated *Bulletin* W-18, which provides technical information and specifications. For a copy, write GOLDEN ANDERSON VALVE SPECIALTY CO., 1200 RIDGE AVE., PITTSBURGH 33, PA.

Safer Winter Pavements

344 A free book on ice and snow removal contains valuable information on the most effective way to keep streets, freeways and tollroads safer in winter. For your copy, write MORTON SALT CO., INDUSTRIAL DIVISION, DEPT. AC-9, 110 N. WACKER DRIVE, CHICAGO 6, ILL.

Hydraulic Tailgate Spreader for Ice Control or Sealcoating

345 Outstanding feature of the new Hi-Way Model "TG" tailgate-mounted spreader is its continuously variable dual-hydraulic cab controls, which permit the driver to instantly regulate depth and width of spread (from 5 to 40 feet). For literature and specifications, write HIGHWAY EQUIPMENT CO., DEPT. H-1, 616 "D" AVE., N.W., CEDAR RAPIDS, IOWA.

Reflective Traffic Markings

346 White or yellow, Catatherm reflective plastic pavement striping can be hot extruded directly and securely onto any pavement, and is said to outlast paint stripes 9 to 26 times. For descriptive literature, write CATAPHOTE CORP., TOLEDO 10, OHIO.

Crawler-Tractor for Big Jobs

347 Sixteen-page *Catalog* MS-1243 highlights the HD-21 crawler-tractor powered by the 225-hp Allis-Chalmers 21000 turbocharged diesel engine. Features discussed and illustrated include hydraulic converter drive, matched power train components, main frame, truck frame, tracks, and accessories. For a copy, write ALLIS-CHALMERS MFG. CO., CONSTRUCTION MACHINERY DIV., MILWAUKEE 1, WIS.

Centralized Control Panels

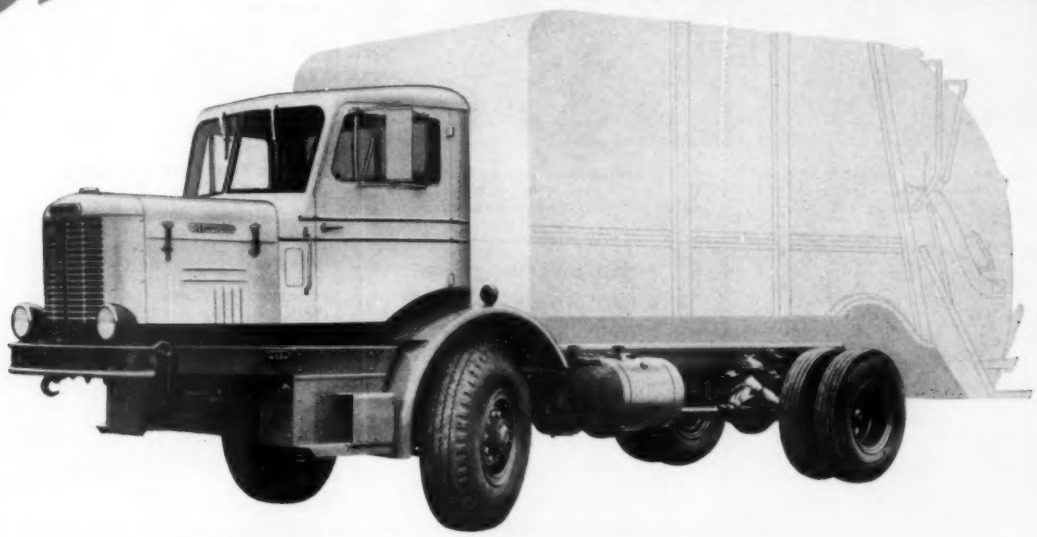
348 A new 12-page catalog illustrating modern water conditioning and ion exchange systems control assemblies includes panels and cubicles of the conventional and graphic type containing centralized instrumentation for automatically controlling, recording, signalling and monitoring system operations of water works plants. For a copy of *Bulletin* 4543, write THE PERMUTIT CO., a division of PFAUDLER PERMUTIT INC., 50 WEST 44TH ST., NEW YORK 36, N. Y.

(See page 70 for more Bulletins)

You asked for it...

HERE IT IS!

THE *Oshkosh* 25-YARD CAPACITY ALL-WHEEL-DRIVE REFUSE HAULER



Designed specifically and exclusively for Refuse Hauling!

The only 2-axle all-wheel-drive chassis designed to accommodate a 20 to 25-yard packer body.

Get complete details and information at the Public Works Congress and Equipment Show, Seattle, Sept. 21-22-23 — Booth C-28 or write . . .

4 and 6 WHEEL DRIVE TRUCKS

OSHKOSH MOTOR TRUCK, INC.
OSHKOSH WISCONSIN

FREE catalogs

Write directly to the address given or use the Post Card on page 55.

Aluminum Waste Receptacles

349 Designed for sidewalk, park, playground and public building use, these waste receptacles offer all the advantages of aluminum. They are corrosion resistant, fire- and water-proof, need no maintenance. Two large doors facilitate depositing of waste. For descriptive literature, write MILLS SALES CO., 2520 W. EIGHTH ST., LOS ANGELES 57, CALIF.

Highway Signs

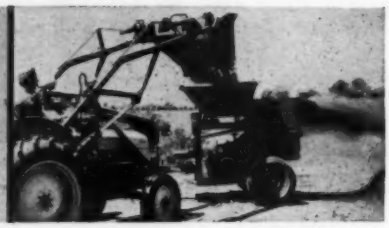
350 Traffic and safety signs of every description—stop, speed limit, parking, directional, barricade, flashers, warnings—are the subject of a new folder released by EASTERN METAL OF ELMIRA, INC., 121 HARRISON ST., ELMIRA HEIGHTS, N. Y., which makes a complete line of reflectorized alumnum and steel traffic and safety aids.

Motor Grader Featured in Film

351 A new film presentation from CATERPILLAR TRACTOR CO., PEORIA, ILL., shows the outstanding features and capabilities of the big (30,000-pound class) 150-hp Cat No. 14, latest addition to the Cat motor grader line. To arrange for a showing of this 8-minute, 16mm sound and color film, write the company.

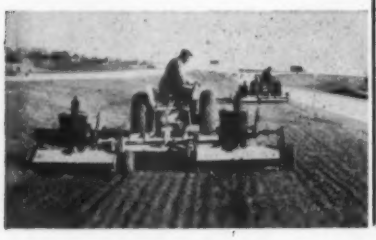
put **POWER** into your economy drive with **WISCONSIN-POWERED** equipment!

ROTARY SNO-FLYR — produced by Bros, Inc., Minneapolis, Minn.—speeds up and cuts the cost of snow removal.



SOIL SHREDDER — built by Lindig Mfg. Co., Inc., St. Paul, Minn. — shreds up to 40 cu. yrds./hr. of various materials.

GANG MOWER—made by the Mott Corp., Brookfield, Ill.—offers king-size economy for large-scale mowing.



While attending the **1959 PUBLIC WORKS CONGRESS and EQUIPMENT SHOW** in Seattle, Sept. 20-23, visit the **WISCONSIN ENGINE EXHIBIT** Booth C-37, and discuss your power equipment problems with our representative.

Wisconsin-powered equipment can help you to realize big savings in spite of spiraling labor costs. It can help you keep turf, streets, and buildings in tip-top shape all year long and stay within your budget.

Rugged, precision-fitted construction improves engine performance, minimizes wear, and keeps equipment "on call" for future jobs.

Wisconsin air-cooled engines furnish fast-starting, smooth-running power in sub-zero cold or in blazing 140°F. heat. Their brute load-lugging power prevents stalling under sudden shock loads and keeps men and machines busy around the clock.

Specify Wisconsin engines on the equipment you buy. Sizes from 3 to 56 hp. For a briefing on the complete line, write for Bulletin S-237. Also write for Bulletin S-228 on Wisconsin Engine Kit for Gravely tractors.

WISCONSIN MOTOR CORPORATION
MILWAUKEE 46, WISCONSIN
World's Largest Builders of Heavy-Duty Air-Cooled Engines

Submersible Pumps

352 Detailed cross section drawings plus colored illustrations of the many and varied uses and applications of Layne submersible pumps make up *Bulletin* No. 202, just released by LAYNE & BOWLER, INC., MEMPHIS 8, TENN. Applications covered include plant water systems; irrigation; reservoir pumping; municipal primary water supply.

All-Around Deodorizer, Free Sanitary Survey

353 You can now arrange for a sanitary survey of your premises, without obligation, by writing to THE C. B. DOLGE CO., WESTPORT, CONN., which will also send upon request, informative literature on fragrant, laborless deodorant discs, called Rounds, for urinals, bowls, garbage pails, lockers and closets.

Precise Surveying Instruments

354 The F/S optical planimeter Model 236/A eliminates eyestrain and parallax in contouring the figure, provides large magnification, and has a vernier unit adjustable from .006 to .020 square inches. It is one product in a complete line of carefully fashioned instruments for the engineer and surveyor discussed in literature from FILOTECNICA SALMOIRAGHI, INC., 254 5TH AVE., NEW YORK 1, N. Y.

Gate Valves

355 Double disc gate valves that assure watertight closure and trouble-free performance and are available in sizes from 2" to 72" are the subject of the *L&R Gate Valve Catalog*, which can be obtained by writing to THE LUDLOW VALVE MFG. CO., INC., TROY, N. Y.

Electric Plants for Emergency and Standby Use

356 Reliable emergency power to operate sewage treatment and filtration equipment when regular power supplies cut off, and portable power for street repair tools and night lighting, are discussed in *Folder* D-25, available from KOHLER CO., KOHLER, WIS., manufacturers of electric plants and air-cooled engines.

Fire Alarm Bells

357 A new line of bells for fire protection is distinctive for its low amperage drain and high decibel rating. Of underdome design and available with 6-, 8-, 10- or 12-inch gong shells, bells are manufactured in standard voltage, both ac and dc. For a 4-page descriptive folder on the N-CO-Bell, write NOTIFIER CORP., 3700 N. 56TH ST., LINCOLN 4, NEBR.

Clean, Safe Runways

358 A new color motion picture fully describes the dangers of jet engine ingestion of foreign matter and the solution through the use of a new air-jet runway vacuum sweeper, capable of sweeping 1 million square feet per hour. Running time of the 16mm sound, color film is 11 minutes. For details, write WAYNE MFG. CO., FILE DEPT., 1293 E. LEXINGTON, POMONA, CALIF.

Redesigned Tandem Roller

359 Major improvements in the Model 210, a 1½-2-ton tandem roller, include a lower center of gravity and increased stability, a transmission of rugged design, a compression roll that gives 110-pound per lineal inch compression and larger diameter roll. For descriptive literature, write ESSICK MFG. CO., 1950 SANTA FE AVE., LOS ANGELES 21, CALIF.

(See page 76 for more Bulletins)

PDM
ELEVATED STEEL TANKS

When your elevated water storage needs are

large in scale

depend upon the unequalled experience of

Pittsburgh-Des Moines

Elevated steel tanks of largest size are supplied by PDM to meet the increasing water storage volumes required by America's ever-expanding communities.

● Engineering of highest excellence, precision fabrication and sure craftsmanship in erection have distinguished Elevated Steel Tanks by Pittsburgh-Des Moines since 1897. Write for prompt quotations.

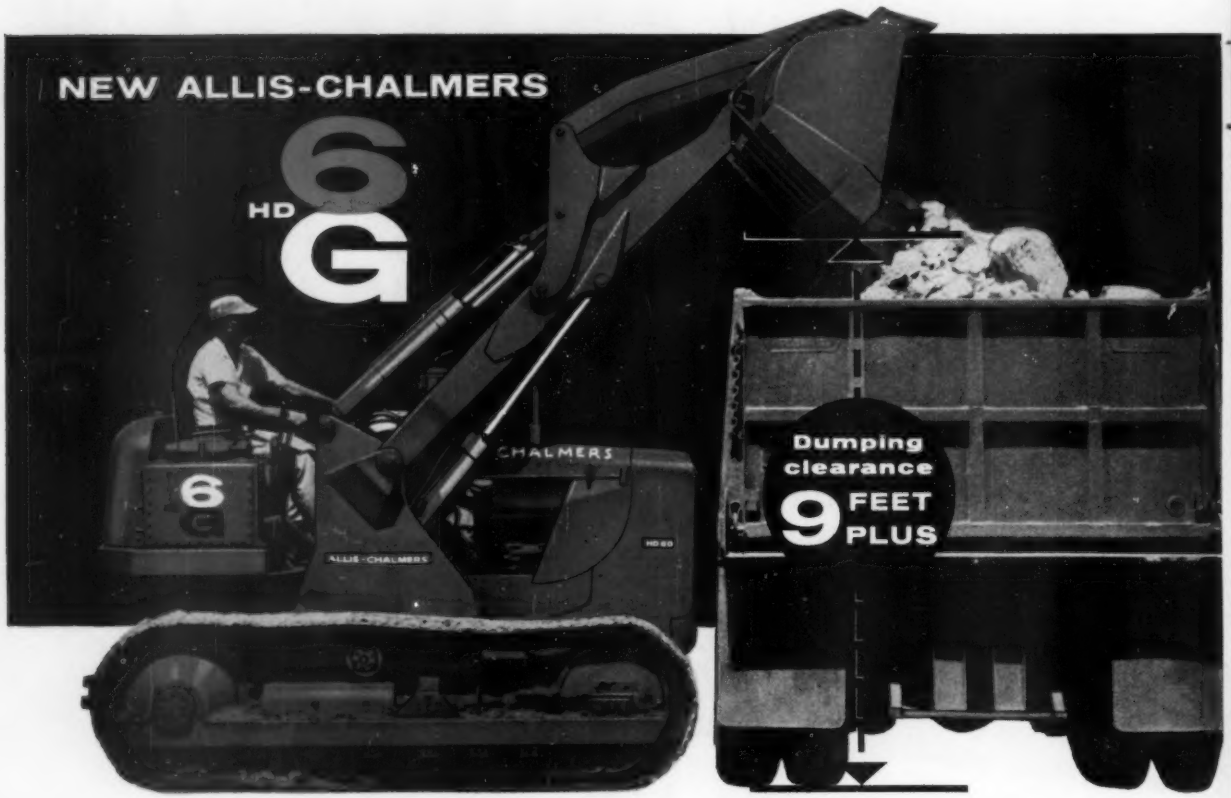
Pittsburgh-Des Moines Steel Company

Plants at
PITTSBURGH, BALTIMORE, DES MOINES, SANTA CLARA, FRESNO, and STOCKTON, CALIF.

Sales Offices at:
PITTSBURGH (25) ..3412 Neville Island
NEWARK (2)....1715 Military Park Bldg.
CHICAGO (3).616 First Natl. Bank Bldg
EL MONTE, CAL.....P. O. Box 2012
ATLANTA (5)..361 E. Paces Ferry Rd., N.E.
DES MOINES (8).....913 Tuttle Street
DALLAS (1).....1217 Praetorian Bldg.
SEATTLE (1).....Suite 320, 500 Wall St.
SANTA CLARA, CAL....619 Alviso Road
DENVER (2)..323 Railway Exchange Bldg.
BALTIMORE (26).....Curtis Bay Station

new slant in tractor shovels . . .
everything you need for

BIG PRODUCTION AT



What you want most in a 1½-yd tractor shovel is here. The new 6G gives you advanced-design features that mean extra productive ability you can *measure*—plus new comfort and convenience for the operator, servicing simplicity and big-tractor strength.

But this is only half the story. Your Allis-Chalmers dealer can tell you much, much more—and *prove* it, too! Why not let him set up a demonstration *now*, on your tractor shovel job? Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

Height with a bonus in reach

With as much as a foot more dumping height than the maximum for ordinary tractor shovels, the 6G reaches 'way out to dump over the center of big, sideboarded, 12-yd trucks. This height-and-reach combination pays off on other jobs, too—like stockpiling or loading out over the sides of excavations.

move ahead with ALLIS-CHALMERS A-C ..

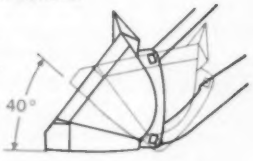
LOW COST

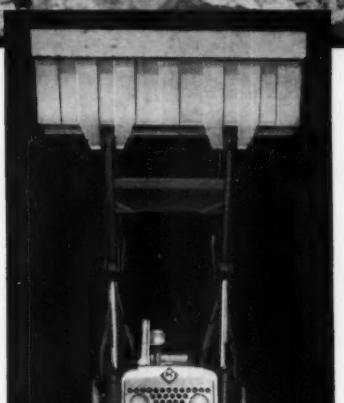
- 72 net engine hp
- 21,000 lb
- 1½-yd general purpose bucket
- 40° bucket tip-back
- Fast reverse to 4.1 mph
- Rugged "in-line" booms and linkage
- Best dump height, reach in its class

Super pry-out action

The new 6G's curved-bottom bucket puts a 10¾-ton force at the cutting edge. This unique "rolling-leverage" action is far more effective than the fixed, toe-and-heel principle of an ordinary, shoe-type bucket bottom. You can break out stubborn boulders, stumps and old pavement easily—get *full* loads *fast* in hardest materials.

Bucket tips back 40° on curved, box-section bottom.





Speed with stability and control

Shift from any forward speed to either reverse speed with a single lever—choose the *right* speed for every tractor shovel function. Powerful hydraulics put big loads right to the top, then bring the bucket down in a smooth, swift cycle. Nearly seven feet of track on the ground . . . positive, accurate controls . . . and new "down-slope" visibility let you handle the bucket and tractor with unheard-of balance and precision.

"In-line" strength

Booms and linkage are twin towers of solid-steel strength, straddle-mounted on wide-spaced pivots in the double-walled side frames. Lift and dump cylinders operate in exactly the same line, put dependable hydraulic power to work *straight from the shoulder.*

. . . power for a growing world

PUT

IDEAL Performance

into your

PUMPING

for greater

EFFICIENCY and ECONOMY

VERTICAL
Hollow or Solid Shaft
MOTORS

a. Small Vertical 15-125 HP
b. Large Vertical 150 HP and Up
c. NEMA H Weather Protected

From top to bottom, IDEAL Vertical Motors are engineered for maximum ease and economy of installation, operation and maintenance. A few of the outstanding features include:

- cast-aluminum drip covers
- non-spilling drain plugs
- flush mounted oil sight gages
- standard or special mounting bases
- thrust bearings sized to each application.

IDEAL Vertical Motors are available in a wide range of HP ratings with enclosures and insulations to meet all environmental conditions. Consult IDEAL for Vertical Motors built to your most exacting specifications.

Ask for Bulletin 212 (15-125 HP) and Bulletin 219 (150 HP and larger)

The IDEAL ELECTRIC & MANUFACTURING CO.

309 East First St. Mansfield, Ohio

SINCE 1903, AMERICA'S FINEST MOTORS, GENERATORS, MOTOR-GENERATOR SETS, SWITCHGEAR AND CONTROLS.

One Tractor Powers 30 Grounds Maintenance Tools!

The new, improved (now 6.6 HP!) Gravely Tractor now powers a complete, year-round maintenance system.

Cut your costs two ways: (1) Because you buy only ONE power unit that powers your choice of 30 quickly interchangeable tools; (2) Because the Gravely will do your jobs better, faster, easier!

Standardize on Gravely—as many cost-conscious cities have. Because Gravely gives you more for your money. More power at the tool through direct, all-gear drive. Simple precise control, low-cost dependable power for year round work. Tools that will do your job most efficiently!

FREE CATALOG & CIRCULAR

Find out why and how Gravely does the job best. Write TODAY for "How to Cut Grounds Maintenance Cost" and Gravely Catalog!

GRAVELY TRACTORS, INC.
P.O. BOX 636H DUNBAR, W. VA.

PERFORMANCE-PROVED SINCE 1922

A Complete Line of

HAYWARD ORANGE PEEL BUCKETS

for every digging and rehandling need!

STANDARD ORANGE PEEL for sand, gravel, loam, etc.

HEAVY ORANGE PEEL for excavating, dredging and general contracting work.

MULTI-POWER ORANGE PEEL for hard, compact materials such as clay, gumbo, sand, etc.

THREE BLADE ORANGE PEEL with reinforced backs for rocks, stumps, piling, etc.

Plus Dwarf and Catch-Basin Buckets

Write for illustrated bulletin giving full details including weights and dimensions.

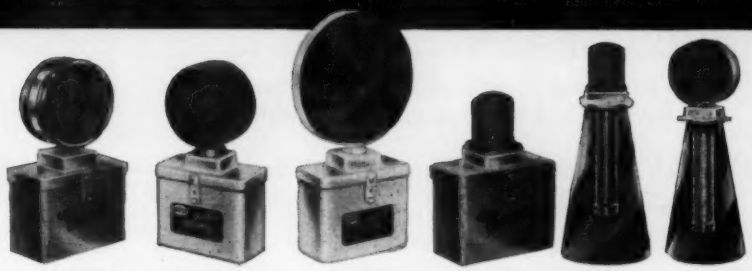
THE HAYWARD COMPANY
50 CHURCH ST., DEP'T A, NEW YORK 7, N. Y.
Builders of Better Buckets Since 1888

On YOUR jobs . . . play it SAFE . . . with the

DIETZ 3-WAY Hazard Warning System!

Use DIETZ
VISI-FLASH LIGHTS
to alert the oncoming driver:

1



No. 600 No. 604 No. 697 No. 620 No. 630 No. 610

Brightest, safest, most trouble-free flashers on the market. Warn: "Danger Ahead."

Use DIETZ
LANTERNS
to locate hazard in relation to the driver's position:

2

No. 1 No. 8 No. 100 No. 40

Show exact location, shape, extent, and boundaries of hazard area. Burn up to 100 hours.

Use DIETZ
TORCHES
to guide driver around the hazard:

3

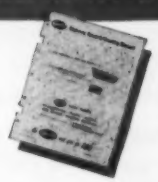
No. 750 No. 87 No. 751 No. 96

Fully illuminate the danger in every weather. Burn up to 48 hours on low cost kerosene.

Go DIETZ and you go Safely

R. E. DIETZ CO.
100 Leavenworth Ave., Syracuse, N. Y.

Please send me a copy of the Hazard Warning Lighting Manual.



NAME_____
COMPANY_____
TITLE_____
ST. ADDRESS_____
CITY_____ ZONE____ STATE_____

SPECIFY A *Proven* SUBMERSIBLE PUMP

SPECIFY "weil"

weil Submersible Sewage and Sump Pumps have been in use since 1951. There is no substitute for experience.

NOW AVAILABLE in a choice of two motors

1750 R.P.M. and Low Speed 1140 R.P.M. for longer life, less wear and improved non-clog characteristics.

NOW AVAILABLE with a choice of two controls

Conventional float switch

MICRO Pressure switch (as illustrated)

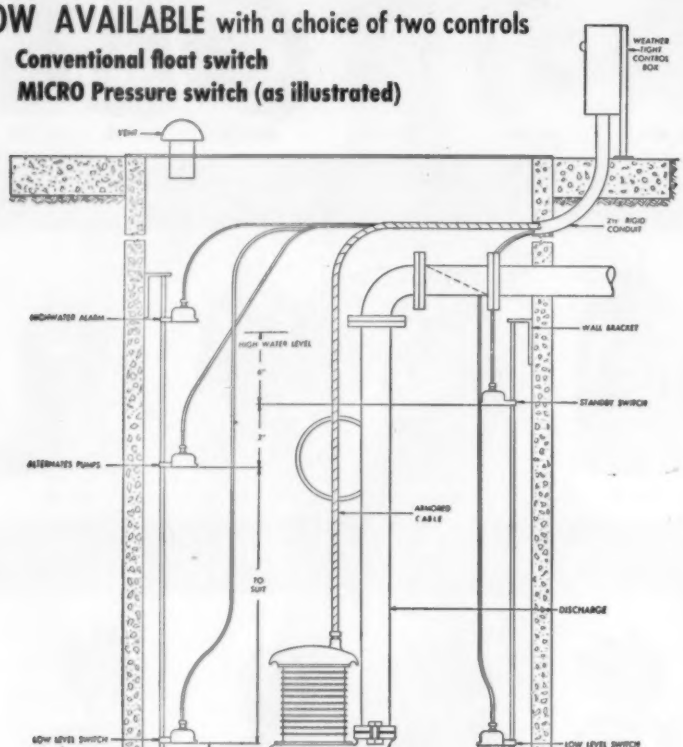


FIG. SE 893

Illustrated is a Duplex Installation of two **weil** Submersible Sewage Pumps employing MICRO Switch controls to start and stop pumps; to alternate pumps; and to provide for high water alarm. Note the ease with which switches are positioned (or changed) to control water levels. The Submersible MICRO Switch has no exposed moving parts, needs no servicing and coupled with the **weil** Submersible Pump provides an extremely efficient non-clog trouble-free pumping system.

weil Submersible Pumps are manufactured in discharge sizes of 3" to 6" and capacities to 2000 G.P.M. There is a **weil** Submersible Pump to meet all requirements.

Send for Bulletins SE-860 and SE 865 for complete engineering information

weil PUMP COMPANY

1518A North Fremont St. • Chicago 22, Ill.

CATALOGS *for Improved Municipal Services*

Write directly to the address given or use the Post Card on page 55.

32-Page Boating Facilities Booklet

360 The second volume of "Boating Facilities," 18 reprinted articles on all phases of facilities installations, has been published by the OUTBOARD BOATING CLUB OF AMERICA, 307 N. MICHIGAN AVE., CHICAGO 1, ILL. It is intended to help in suggesting ideas and plans to authorities as to what municipalities can do to create boating facilities.

New Street Light Control

361 This cadmium-sulphide photoelectric control for dusk-to-dawn operation of street and highway lighting circuits contains a sensing element instead of vacuum tubes. Mounting and operating data for mercury, filament and fluorescent luminaires are given in 4-page *Bulletin* GEA 6987, available from SECTION G450-5, GENERAL ELECTRIC CO., SCHENECTADY 5, N. Y.

School Traffic Control

362 Crouse-Hinds has designed its Type PA-30 school traffic signal system for mid-block crossings and to operate during the a.m. and p.m. automatically in response to push buttons. An electronic controller provides simple timing adjustments. Control knobs are easily turned to desired settings. For complete information, write CROUSE-HINDS CO., SYRACUSE 1, N. Y.

Worthington's First Submersible Pump

363 Worthington's new Utra-High Flow (UHF) design, which brings with it broader coverage and higher efficiencies, is now applied to the company's new submersible pumps, designed for use with deep settings and high heads, and appropriate where little space is available, or where noise from surface units would be objectionable. For details, write WORTHINGTON CORP., HARRISON, N. J.

Chips Branches Up to 8 inches in Diameter

364 This largest, most powerful brush chipper on wheels is new to the M & M Beaver line. It shaves off chips instead of cutting them, has a heavy rotating cylinder that eliminates the need for an overhanging flywheel, and its built-in blower regulates the direction and distance of chips. Descriptive literature can be obtained from MITTS & MERRILL, 1003 SO. WATER ST., SAGINAW, MICH.

Service Truck Bodies

365 A full line of service and construction truck bodies, designed for rugged use and with flexibility to meet the specific requirements of municipal utility and maintenance departments, is discussed in descriptive literature, available from UTILITY BODY CO., 1530 WOOD ST., OAKLAND 7, CALIF.

Tractor Shovels, Dozers, Cranes

366 Fast, mobile and efficient, Michigan tractor shovels, cranes and tractor dozers speed work and reduce the cost of such municipal operations as ditch digging, pipe laying, backfilling, sanitary landfill, grading, cold patching, loading, etc. For descriptive literature, write CLARK EQUIPMENT CO., CONSTRUCTION MACHINERY DIV., 2495 PIPESTONE, BENTON HARBOR 27, MICH.

GALION® 12-Ton Pneumatic-Tire Roller

NEW NEW NEW NEW NEW

2239

Only Galion offers EQUA-MATIC front end construction

Through the automatic balancing action of three king pins, safe roller support is always assured when working over uneven or sloping ground. Galion's exclusive EQUA-MATIC design provides an equalizing movement straight up and down of all five steering wheels, and an oscillating up and down movement of the end wheel pairs. Thus, firm compacting contact is maintained with the surface at all times by the five wheels.

plus 18 other important features

- ROLL-O-MATIC or standard gear shift drive.
- SYNCHRO-MESH transmission.
- UNITIZED assembly provides easy access and servicing.
- AUTOMOTIVE-type hydraulic steering.
- LARGEST ballastable capacity in relation to overall size—in excess of 24,000 lbs. total weight with wet sand ballast.
- EIGHTY horsepower gasoline engine.
- HEAVIEST construction—8,400 lbs. metal weight.
- LOW center of gravity.
- 100% COVERAGE—treads of the nine tires overlap.
- WIDE RANGE of speeds—same range forward and reverse.
- SHORT drive shaft.
- DOUBLE drive chains to each pair of drive wheels.
- FOUR-WHEEL hydraulic service brake and independent parking brake.
- EXCELLENT visibility for operator.
- SHORT turning radius.
- FOUR large doors for ballast removal.
- SWIVEL seat, fully adjustable.

THE GALION IRON WORKS & MFG. CO.
General and Export Offices —Galion, Ohio, U.S.A.
Cable Address — GALIONIRON, Galion, Ohio

GREATER STABILITY

Maximum stability and support across the entire front end of the roller is achieved by GALION'S three-point king pin suspension of the five steering wheels. PATENT PENDING.

SYNCHRONIZED 5-WHEEL STEERING

Each of the five steering wheels is adjusted to always steer in its own true arc. This design eliminates the pushing and gouging of material which results when no provision is made to compensate for arcing variations in multiple-wheel steering.

EASY SERVICING

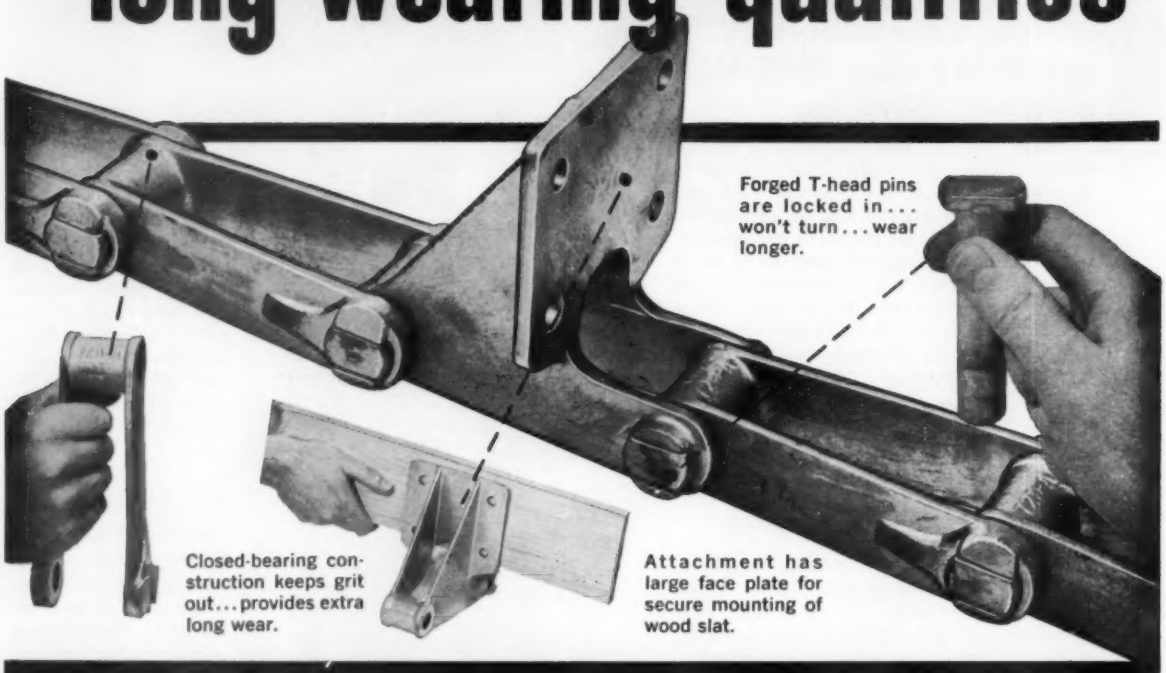
Unitized assembly permits each wheel and wheel brake to be serviced individually, as well as the oil-tight double drive chains. The entire power train can be removed as a unit.

Write for literature.

GALION® ESTABLISHED 1907

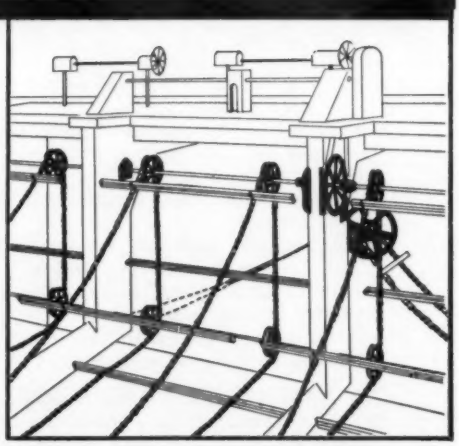
MOTOR GRADERS & ROLLERS

Why Moline long pitch pintle chain has long wearing qualities


Forged T-head pins are locked in... won't turn... wear longer.
Closed-bearing construction keeps grit out... provides extra long wear.
Attachment has large face plate for secure mounting of wood slat.

For a serviceable, long wearing chain at a moderate price, sewage treatment plants prefer Moline Long Pitch Pintle Chain. It is designed and proportioned to provide great strength at minimum weight... is stronger than detachable chain and less subject to wear. Moline Pintle Chain is assembled with forged T-head pins with cotters. This construction prevents the pins from turning... prevents the entrance of grit... minimizes wear. Special analysis metal with superior corrosion resistance is available in this chain.

Write for information and prices or phone your local Moline representative.



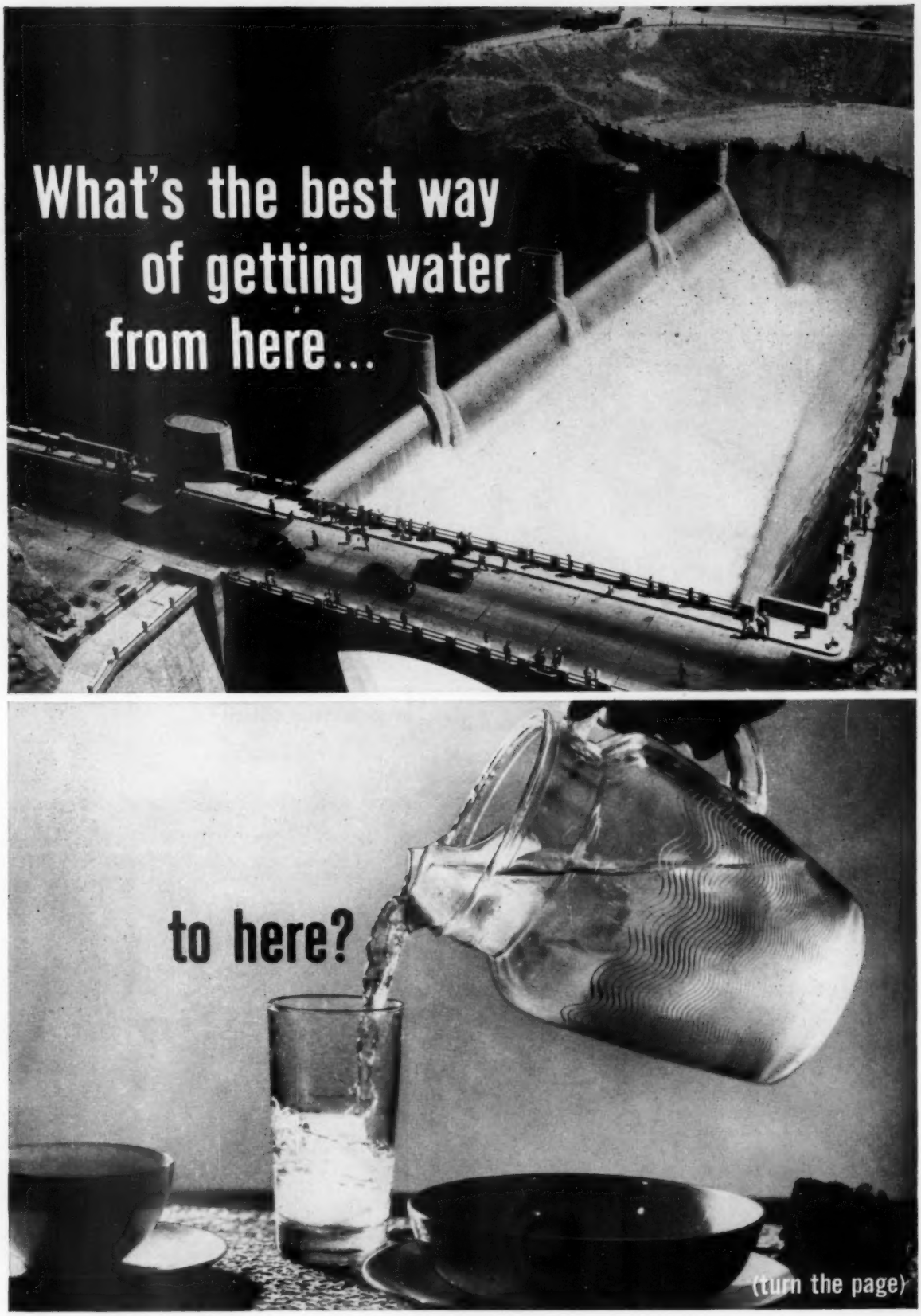
LEADERS FOR 60 YEARS

Moline Malleable Chains

MOLINE MALLEABLE IRON CO.

St. Charles, Illinois

Specializing in the Manufacture of Chains


What's the best way
of getting water
from here...
to here?
(turn the page)

CAST IRON PIPE

America's greatest water carrier

Installation of 2000 feet of 12-inch mechanical joint cast iron pipe along state highway.

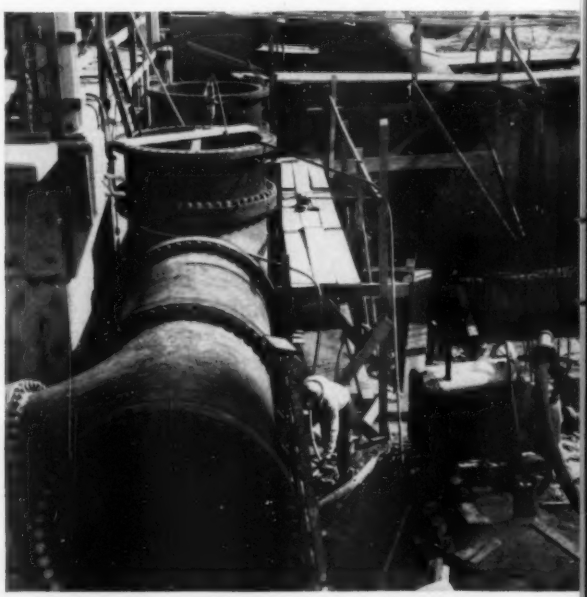
Why do we say that?

This year, as every year, more miles of underground cast iron water mains are in use than all other kinds of pipe combined.

Furthermore, more miles of cast iron water mains are now being purchased and laid than of any other kind of pipe.

Yes, cast iron is always the favorite. A recent impartial survey showed that consulting engineers and water utility officials prefer cast iron pipe for underground water distribution by an overwhelming majority.

Eight-inch cast iron pipe ready for installation of 2-main water system in new subdivision.



Installation of 60-inch flanged pipe and fittings for circulating condenser water in a power plant.

Major additions to a municipal water system totaled 116,080 feet of slip-on joint cast iron pipe in 6-, 10- and 12-inch sizes.

Private water company main extension of 6-inch slip-on joint pipe for housing development.

What are its advantages?

- LONG LIFE. The cast iron pipe you install today will be performing economically a hundred years from now.
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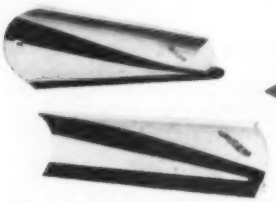

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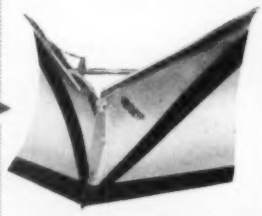

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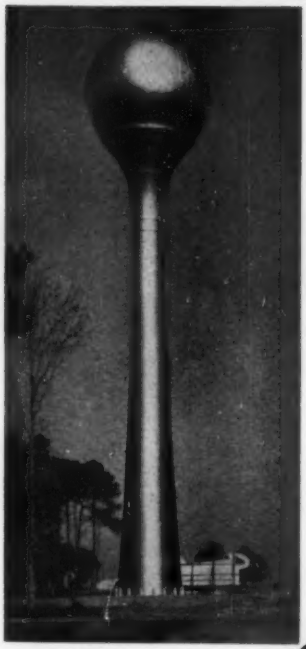

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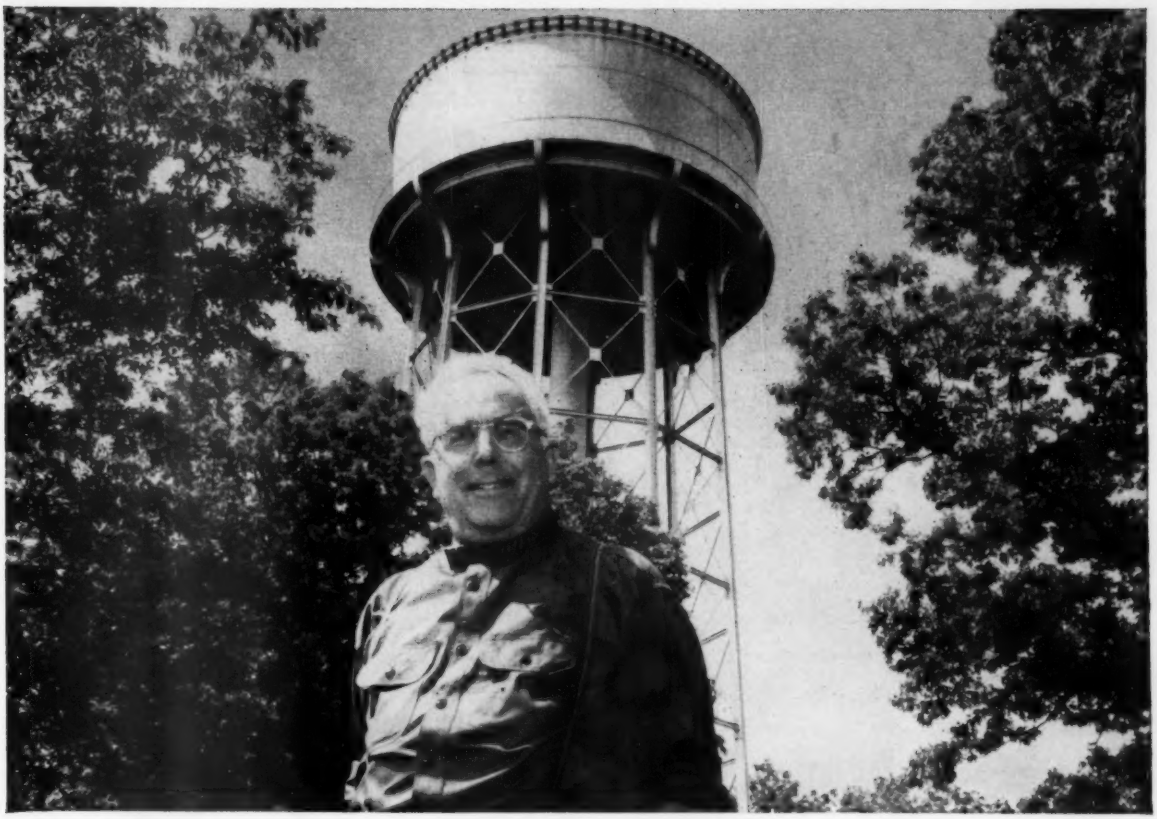

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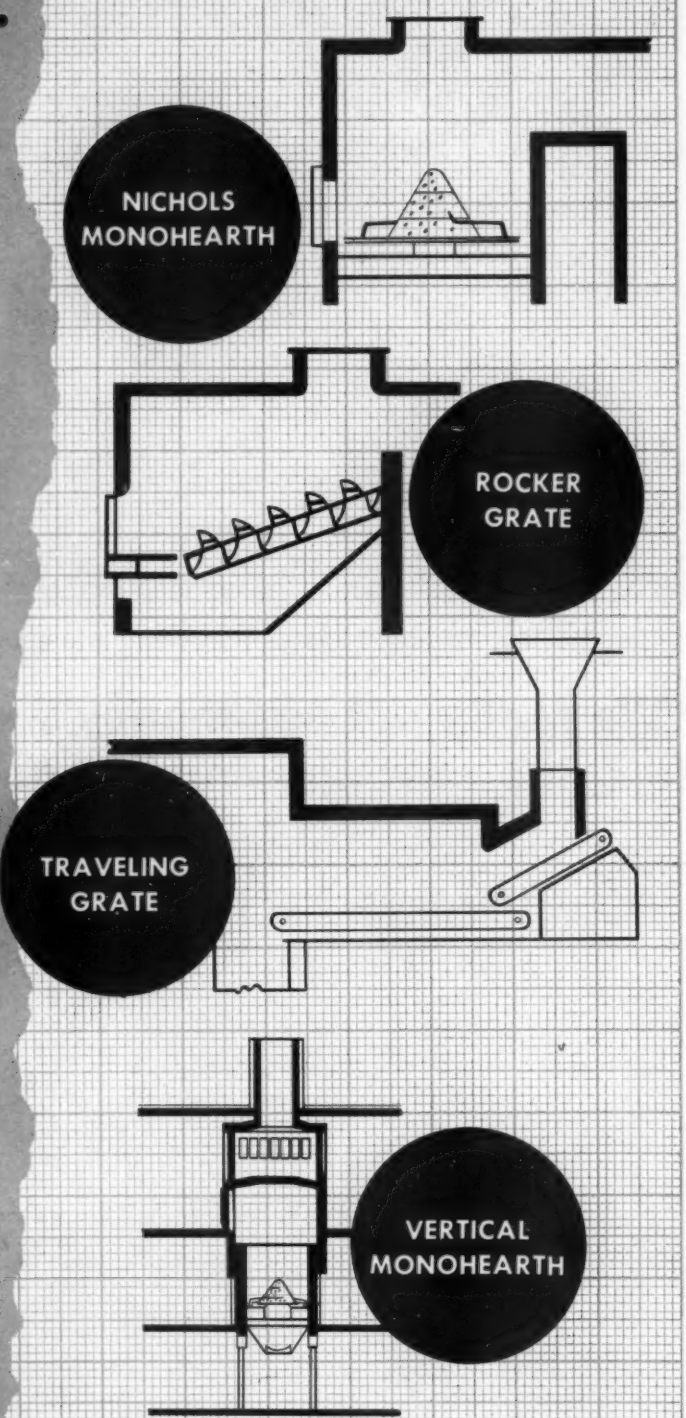

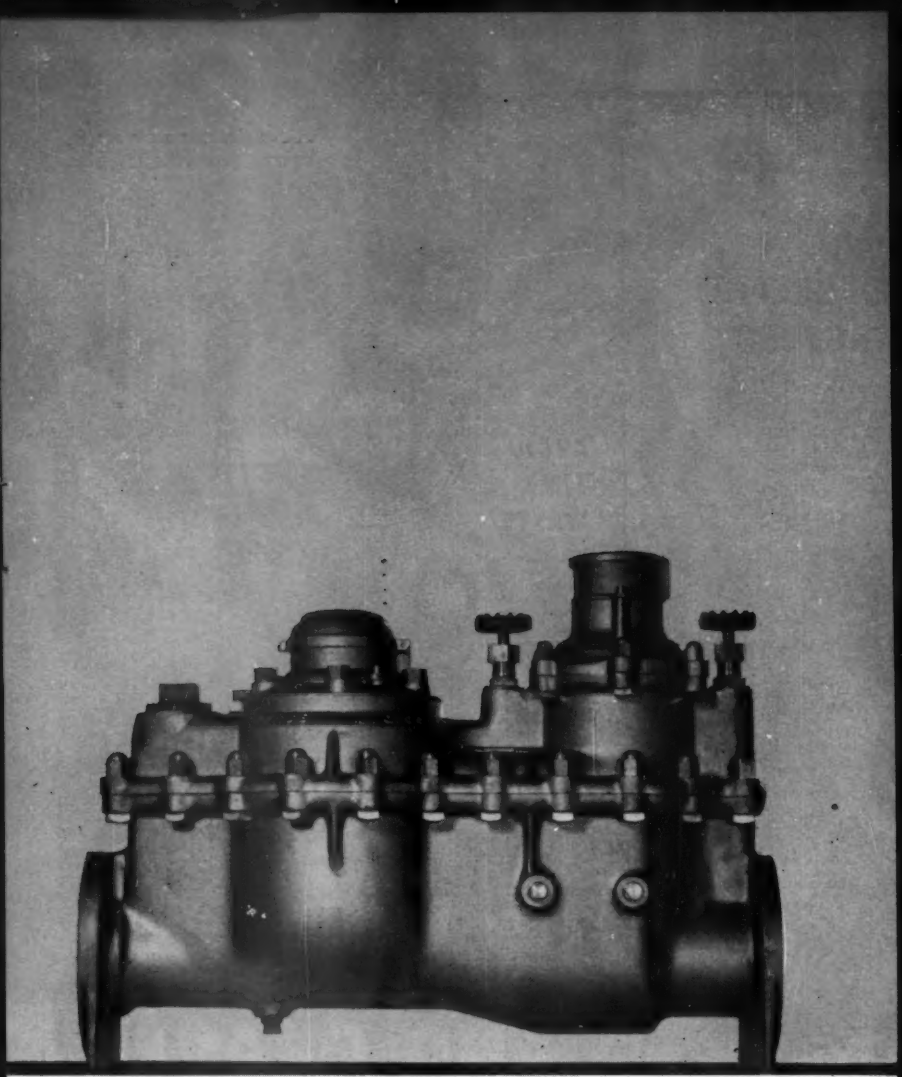

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Find out first hand . . . see the IH dealer nearest you! For his name, and specification folder, write International Harvester Company, Dept. AC9, P.O. Box 7333, Chicago 80, Illinois.

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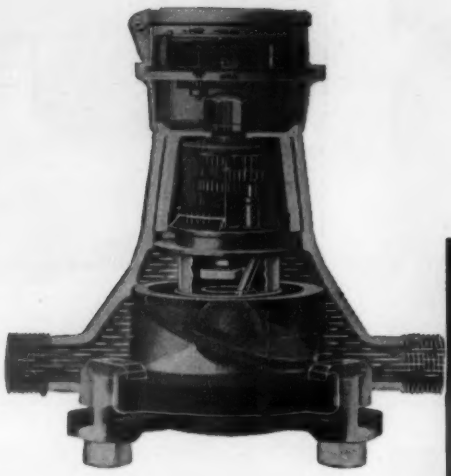

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SEPTEMBER 1959

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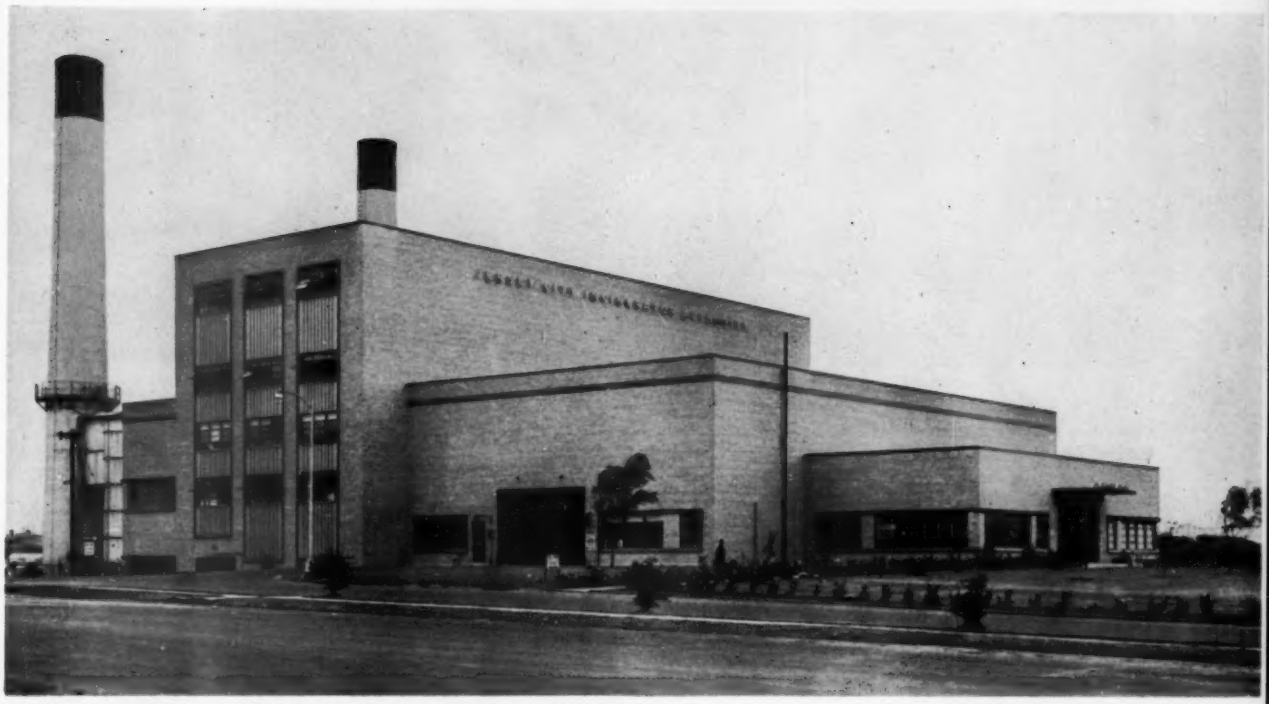


The Jersey City incinerator plant, with its grass, flowers and shrubbery, displays the pleasing appearance that such an installation can have.

Jersey City Solves Its Refuse Disposal Problem

Incinerator Authority takes over collection duties and constructs incinerator for refuse disposal

By **FRANCIS J. LYNCH**, Plant Supt.
Jersey City, N. J.

Completion of a 600-ton-per-day incinerator plant marked the end of a hard struggle to rid the city of unsightly refuse dumps and antiquated household garbage collection methods. No single person is responsible for the change but several do deserve special mention for outstanding service.

The City Commission, acting upon a resolution submitted by the incumbent mayor, John V. Kenny, established the Incinerator Authority in 1951. Commissioner Frank H. Tuohy, a banker, was appointed as chairman, a position he still holds. Ably assisted by Commissioner Dr. S. A. Choffy, a physician, who is Vice-Chairman of the Authority and Chairman of the Building Committee, they have served unselfishly in supplying leadership, wisdom and energy to the Authority. Shortly after its inception, the Authority appointed Frank G. Manning, professional sanitary engineer, as its technical director.

For many years private contractors collected all refuse and in many

Left:
The fully enclosed tipping floor provides ample space for unloading seven trucks at one time.

Right:
Two overhead cranes transfer refuse from the storage pit to the four furnace loading hoppers.

cases the service rendered left much to be desired. After an engineering study, the Authority organized a collection system using 32 collection vehicles of 16-yard capacity. Today, most of these use Gar Wood bodies on GMC chassis. These trucks average 7000 pounds per load, which includes the light load taken at the end of the day.

Because Jersey City is completely surrounded by other communities, incineration offered it the best method of disposal. Authority members traveled to various cities to inspect incinerators and select the type which would best serve the city's 300,000 residents.

In 1952 the Authority retained the services of Louis P. Booz, consulting engineer of Perth Amboy, N. J., to design and supervise construction of a 600-ton-per-day plant. The Morse Boulger Destructor Company of New York City received the contract for construction of the incinerator and appurtenances. The plant went into full operation on July 1, 1957 after a six-week training and break-in period. It is currently operating on a six-day week, two-shift schedule.

Crane-and-Bin Type

Before entering the building, all trucks weigh in on a Fairbanks-Morse Model CR electronic dial scale of 65,000 - pound capacity marked in 20-pound increments. It is also furnished with a tare having an additional capacity of 21,000 pounds. The weighing platform is 34 feet long by 10 feet wide.

The 3,578-cubic-yard storage pit and tipping floor is completely housed. Seven trucks may discharge their load simultaneously. Two P&H cranes with 2¼-cubic-yard buckets transfer refuse from the pit to the furnace loading hoppers.

Burning takes place in four 150-ton-per-day Morse Boulger units. The 15-foot inside diameter furnaces have a grate area of 176.7 square feet, each designed to burn 12,500 pounds per hour. Unit volumes are as follows:

Ignition Chamber—1,650 cubic feet
Combustion Chamber—2,250 cubic feet
Expansion Chamber — 4,280 cubic feet for two units

Auxiliary equipment includes Beaumont Birch oil - hydraulicaliy operated, 5-foot sliding-type charging and ash-discharge gates; forced draft equipment; oil burner system; motor - operated dampers; fly - ash elimination device and automatic over-fire doors.

Efficiency Increased

Originally the furnaces were equipped with manually - operated ash dumping grates and the standard stoking arms. In 1958 we installed a hydraulic grate system and a new type of stoking arm manufactured by the Morse Boulger Destructor Co.

Sixty-four cylinders, 2-inch I.D. with 5¾-inch stroke and activated under 1,200 psi, operate the new dump-grate system. Thirty-two four-way valves, each of which

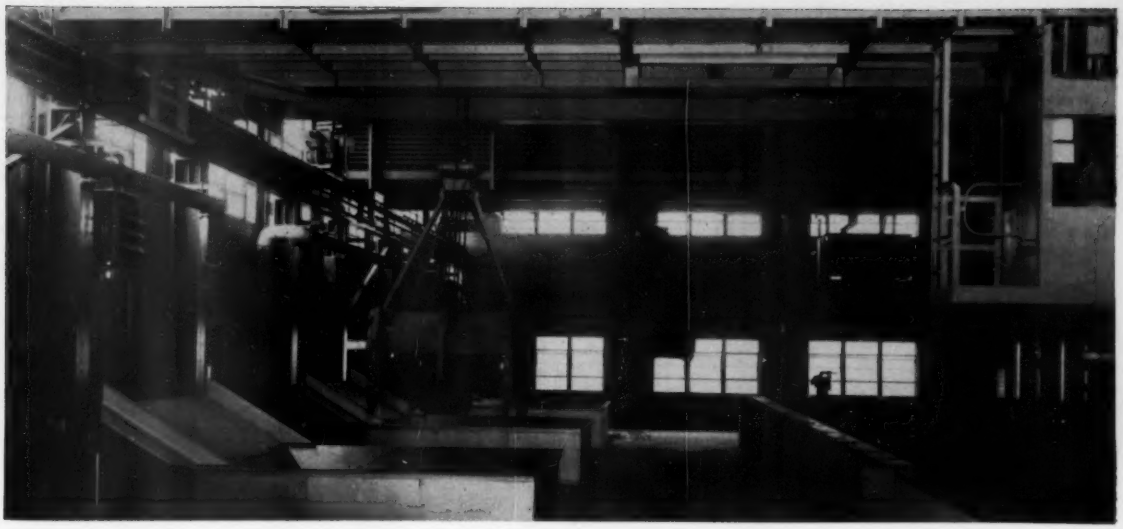
Table I

Burning rate with old and new stoking and ash dump systems

	1957 Old System		1958 New System	
	Hours in Operation 4 units	*Tons Consumed 4 units*	*Hours in Operation 4 units*	*Tons Consumed 4 units*
July	1,110	6,649	936	7,438
August	1,078	7,087	959	7,340
Sept.	1,085	7,177	1,035	7,597
Oct.	1,292	7,857	1,191	8,730
Nov.	1,339	7,416	1,060	8,374
Dec.	1,349	8,352	1,245	9,192
Totals	7,253	44,538	6,426	48,671
Average	12,250 lbs. per hr/unit		15,000 lbs. per hr/unit*	

A gain of 2,750 lbs. of refuse burned per hour per unit.

***Six-month average is 21% over design capacity.**



operates two cylinders, give the operator a wide dumping-grate selection in order to maintain a well-burnt ash. The eight stoking doors in each furnace again give the operator closer supervision of the burning as the refuse drops from the charging hopper to the center of the ignition chamber.

The longer stoking arms slowly move the burning refuse to the outer perimeter of the furnace where the ash is dumped into a receiving pit, quenched by eight sprays, and then trucked to the disposal area.

Burning Techniques

The original burning technique made it mandatory to completely dump and clean the ignition chambers approximately every hour and forty-five minutes with a resultant thermal shock to the chambers and a loss of approximately one hour and fifteen minutes of burning time every eight hours. The new burning technique eliminates this loss and cuts the maintenance cost.

Table I shows the saving in burning time and the increase in production.

The fly-ash control equipment is located adjacent to the two 127-foot-high by 8-foot-7-inch I. D. stacks. Before entering the stacks, the gases pass through water sprayed at 125 psi, causing most of the fly ash to settle out. The density and temperature of the hot gases are recorded and controlled on an operating panel in the furnace room.

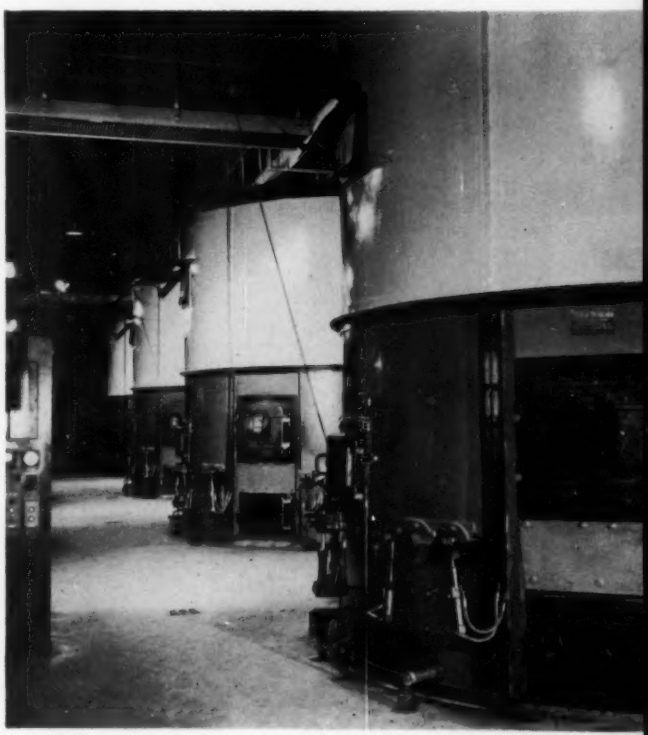
A double heat-alarm system alerts the operating personnel should furnace temperature rise above the normal heat range. First a light flashes on the operating panel at 1500°F, and at 1750° an electric howler sounds until the heat is under control.

Waste-Heat Boilers

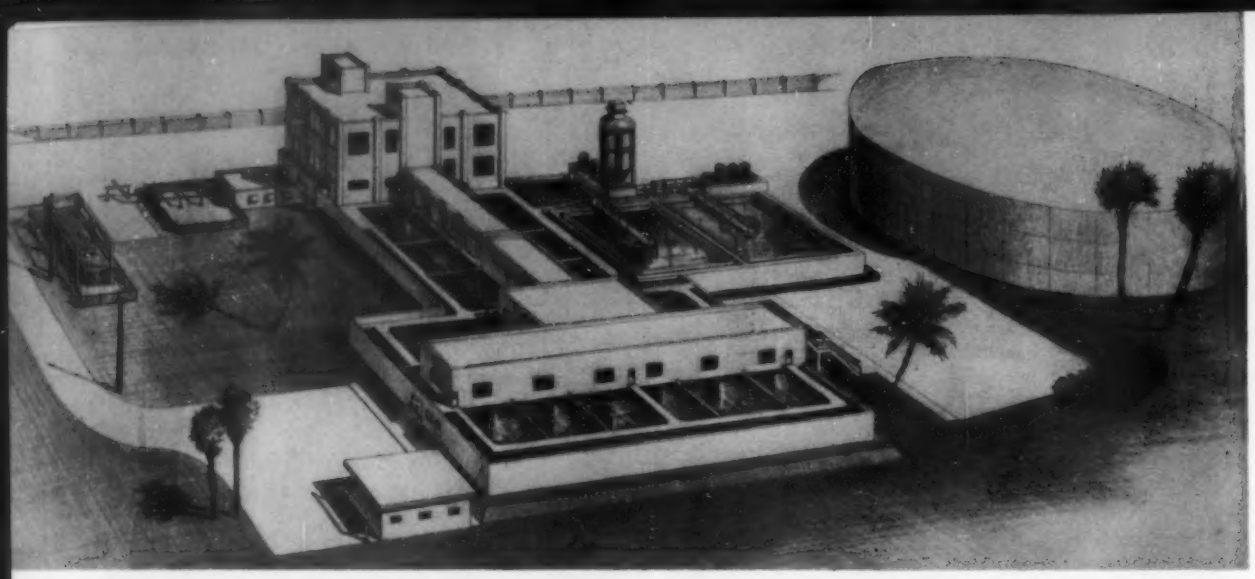
Two Erie City waste-heat boilers provide heat to the main building by supplying steam at 15 psi to 18 blower-type heaters which are located in various parts of the building.

The air-conditioned administration office in the front section of the building houses the office staff handling the details involved in the twice-a-week collection system and plant operation.

In addition to disposing of its own refuse pickups, the Authority extends its incineration facilities to industry and private collection contractors for destruction of industrial wastes at a nominal fee.



This view of the furnaces shows the hydraulic cylinders that operate the ash-dumping grates. Each furnace has 16 cylinders.

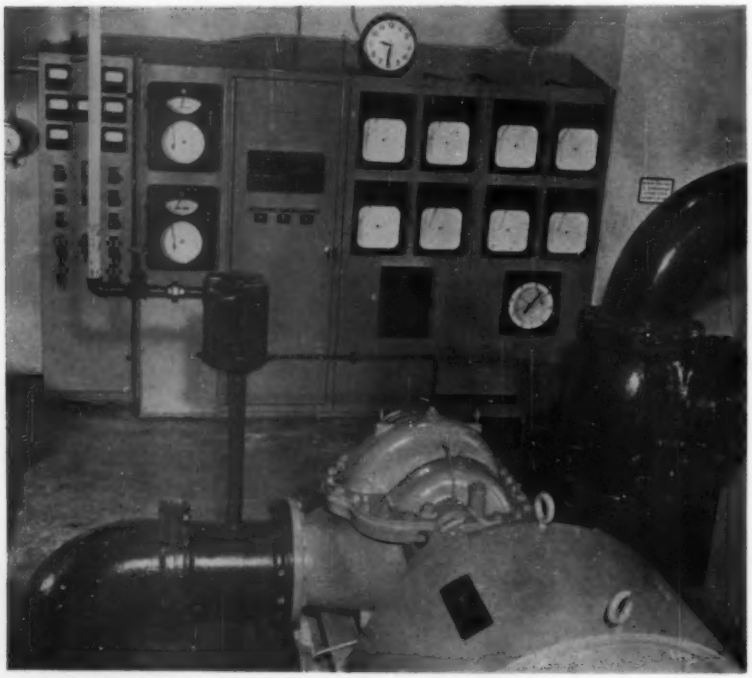


Architect's rendering of the Fiveash Plant as it will look when the present program is completed.

Instrumentation and Automation

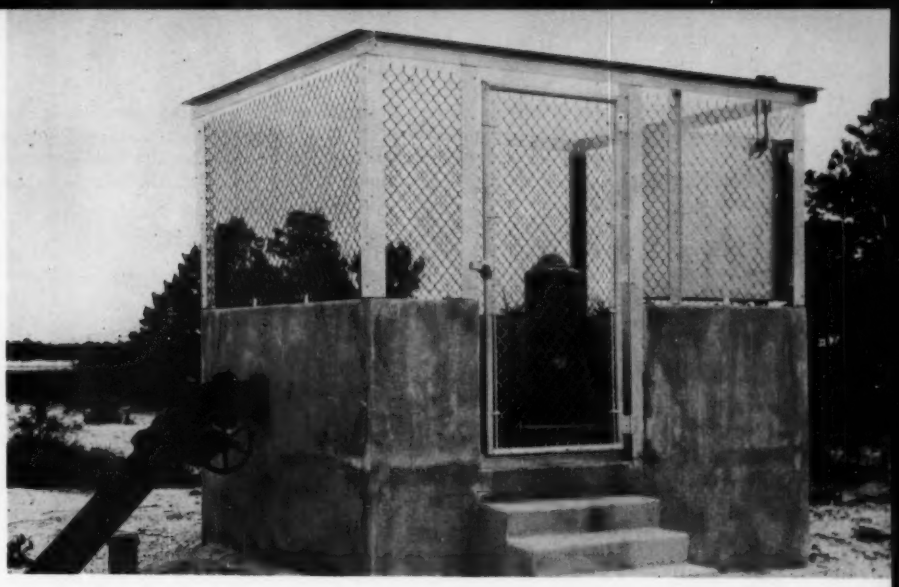
By **CHAS. S. McKINNEY**
Director of Utilities
Fort Lauderdale, Fla.

A few years ago, prior to Fort Lauderdale's unprecedented growth, the only instruments considered necessary for operation at both of our water treatment plants were raw and treated water meters and recording pressure gauges on the high service lines at the plants. Operators controlled rate of filtration manually by adjusting weights on the lever arms of the hydraulic controllers and the only automatic chemical feed control was on the chlorinators. An operator, using a jeep for transportation started and stopped the wells at the sites as demand for water changed. A visit to all wells required approximately



Charles S. McKinney

The first step in the instrumentation program consisted of installing telemetering equipment. These receiving instruments are in the Fiveash Plant.



Fort Lauderdale obtains its water from 47 wells supplying two treatment plants.

Become Necessary With Growth

five miles of driving at each plant. Plant operators had no indication of water pressure in the city about five miles away and no means of knowing the water levels in the five elevated storage tanks located in various sections of the city.

Even with two plants, this method of operation worked fairly well. But as operations expanded and became more complicated, so did the problems involved, clearly indicating the need for instruments and controls.

Telemetering Utilized

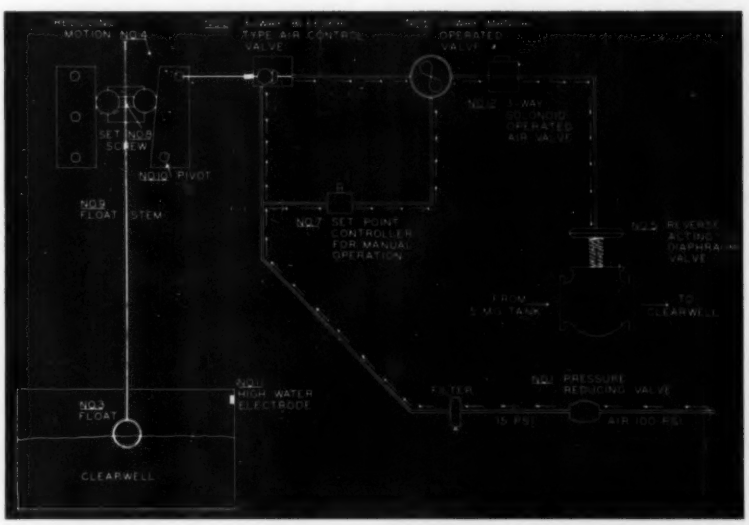
The first step in our instrumentation program consisted of installing Control Corporation and Bristol telemetering equipment at each plant. The recorders at each plant show on 24-hour charts the water elevations at each of the five elevated tanks, the distribution pressure at the farthest point in the system, and the high service pressures at each plant. Our system utilizes a two-wire telephone line leased from the local telephone company. The distribution pressure telemeter automatically starts and stops high service pumps as required to maintain adequate system pressure.

At the Fiveash Plant, the newer of our two water plants, we installed a similar system using a two-wire leased telephone line to control operation of the ten wells by push buttons located in the high service pump room. Expansion work started in 1957 included construction of 12 new wells of 800 gpm capacity each. They too, will be automatically controlled.

Home Design

Our next step involved installation of a control, designed by the writer, that automatically maintains a constant minimum level in the clearwell regardless of variable high service demand. This we accomplished by supplying water to the clearwell from a 5,000,000-gallon ground level treated water storage tank installed at each plant several years ago. When high service pumpage exceeds the filtration rate and the water level in the clearwell falls below a predetermined level, the control allows water from the ground storage tank to flow into the clearwell as shown in the diagrammatic sketch of this control; the operation is as follows:

Compressed air from the plant air system is reduced from 100 psi to 15 psi in the reducing valve (No. 1) and then supplied to the 3-way bleeder-type air control valve (No. 2). This valve, actuated by a float (No. 3) in the clearwell, operates



A diagrammatic layout of the clearwell level control.

a unique reducing mechanism (No. 4) that reduces a 6-inch-float travel to a ⅛-inch travel of the air control valve (No. 2). Valve No. 2 sends a pneumatic signal to a reverse-acting diaphragm-operated valve (No. 5) which allows treated water to flow from the 5,000,000-gallon reservoir to the clearwell in sufficient quantity to maintain a constant level in the clearwell.

The operator may change from automatic to manual control by rotating the 3-way manually operated valve (No. 6) and adjusting the set point indicator (No. 9) for the desired flow. The high level electrode (No. 11) automatically cuts power from the solenoid (No. 12) when water reaches the electrode. This results in the closing of valve No. 5 and a siren also sounds, warning the operator of a high clearwell level.

The unusual float-operated reducing mechanism was designed by the writer. This 6-inch float travel to ⅛-inch air valve travel completely eliminates "hunting" and results in a smooth feeder flow with close maintenance of clearwell level. By-pass needle valves in the air lines, volume air storage tanks, or dash-pot dampeners are not required.

Ball bearing rollers are attached to the float valve stem by means of a set screw (No. 8). Loosening the set screw and sliding the float stem up or down varies the clearwell level setting. Any amount of reduced motion can be obtained by changing the angle of the pivoted lever arm (No. 10).

A closeup view of the reducing motion mechanism for control of the clearwell water level.

Other Automatic Devices

The third step in automation consisted of eliminating the weight-adjusted filter rate controls and substituting air-operated controls. The system is similar to that previously described, except that the filter flow rates are controlled by the filter basin level rather than the clearwell level. Manual control from set point indicators can be accomplished directly from the filter operating tables at the upper floor level.

Chemical feeds at the Fiveash Plant are now automatically controlled with the exception of activated silica. The lime machines are connected to the raw water flow meter by means of Eagle Flexipulse and Cycl-flex timers that pace the machines according to the raw water flow. The machines will deliver the proper proportion of lime no matter how many wells are in service.

The sludge blow-off from the Dorrco Hydrotreator is programmed by a Cycl-flex timer which operates the blow-off valve by compressed air and sludge pumps automatically empty the sludge mixing pit when the sludge reaches a high level electrode.

Raw water inflow is still under manual control, but the plant expansion program now underway provides for raw water control through two air-operated butterfly valves actuated from the Hydrotreator basin level. This expansion also contemplates a totalizing meter to record the flow of both treated water meters. This totalizing meter will operate an automatic post chlorination system to maintain the desired chlorine residual leaving the plant regardless of changes in quantity of water pumped.

Overflow Control

An elevated storage tank control, also designed by the writer, has proven very successful. We equipped four of our five tanks with this device thereby saving considerable water formerly lost by tanks overflowing into sewers and waterways due to malfunction of the altitude valves. Maintenance has been practically nil.

The device consists of a high water level electrode, motor-operated valve and a check valve. When water level reaches the electrode the motor valve between the tank and main closes. When the system pressure becomes less than static head pressure water flows from the tank into the system through the check valve in the bypass line around the motor valve. As the water level drops below the electrode, the motor valve opens allowing full flow of water into the main.

We installed a modification of this control device on the fifth tank. This tank located in the beach area at a distant point in the system frequently emptied itself by noon on days of high demand, resulting in low pressure at the beach in the afternoon.

To conserve storage and maintain stable pressures, we installed a balanced diaphragm-operated valve along with the check valve in the feed-out bypass line. This valve is operated by compressed air from a small compressor, through an air-operated pressure controller. The controller maintains a desired set pressure in the street main by adjusting the flow of water from the tank. Thus, an adequate pressure can be selected, the setting made accordingly, and a throttled outflow from the tank will not begin until the set minimum pressure in the system is reached.

Looking Ahead

Along with instrumentation and automation, we are constantly increasing plant capacity. As previously mentioned, we operate two plants. The Dixie Water Plant, the city's oldest, was built in 1926 with an extension added in 1947 doubling its capacity to 14 mgd. Twenty-five wells with an average depth of 125 feet and an output of approximately 400 gpm each supply water to the plant. The plant has a clearwell storage of 2.5 million gallons with a ground storage tank of 5 million gallons. Treatment at this as well as the Fiveash Plant consists of aeration, chlorination, lime softening, and filtration.

High service equipment consists of four Allis-Chalmers and one Worthington centrifugal motor-driven pump, two of which are equipped with emergency diesel drives.

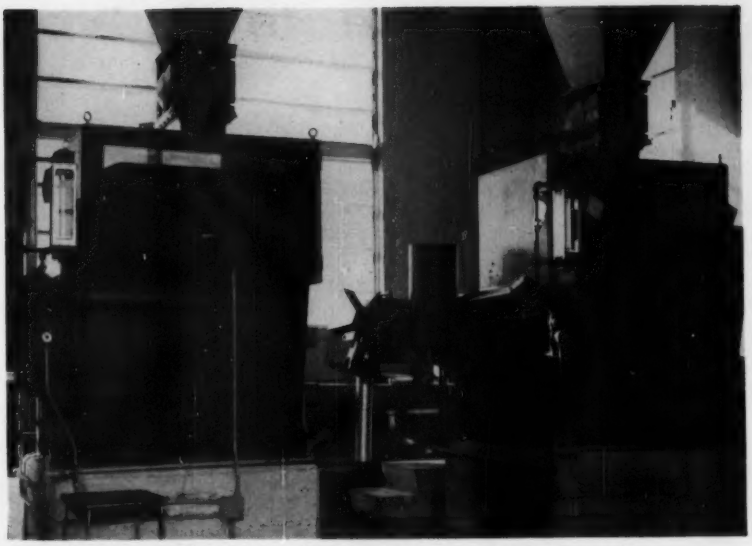
The new Fiveash Plant was designed for an ultimate capacity of

32 mgd. We completed the basic installation and facilities for producing 8 mgd in December, 1954, and are now working on the first addition designed to increase capacity to 16 mgd. Twenty-two wells with a capacity of 800 gpm each supply water to the plant. High service equipment includes five Peerless centrifugal motor-driven pumps, one of which is equipped with an emergency diesel drive.

Present work includes the addition of three new Infilco aerators of 2,600 gpm each, one new Dorrco Hydrotreator unit rated at 8 mgd, and twelve new filters. However, only six of the filters will be equipped at the present time. They have Wheeler bottoms, Palmer rotary surface wash systems, and will be controlled by Builders - Providence rate of flow controllers, pneumatically operated butterfly valves and filter operating tables.

Storage at this plant also consists of a 5-million-gallon ground storage reservoir and 3-million-gallon clearwell capacity. Capacity of the five elevated tanks totals 3 million gallons.

High service pumping will be augmented by one 10,000-gpm Allis-Chalmers unit on the present pump floor plus a Caterpillar diesel-driven unit installed in an auxiliary pump station adjacent to the main building. The diesel unit will be a Fairbanks-Morse horizontal centrifugal pump delivering 5,000 gpm at a total dynamic head of 210 feet or 7,500 gpm at a head of 180 feet operating at 1,200 rpm. Space will be provided for a second similar unit.



Several years ago chemical machines such as these Omega lime slakers were manually controlled; now pumpage governs automatic adjustments.

Automatic and push-button controls are a main feature of the new addition. One operator and an assistant will control the plant from the central control panel in the operator's air-conditioned office. Signal lights, switches and charts on the Westinghouse panel represent practically every function within the plant.

Philpott, Ross and Saarinen of Fort Lauderdale are the consulting engineers for the project. The work is scheduled for completion in December 1959.

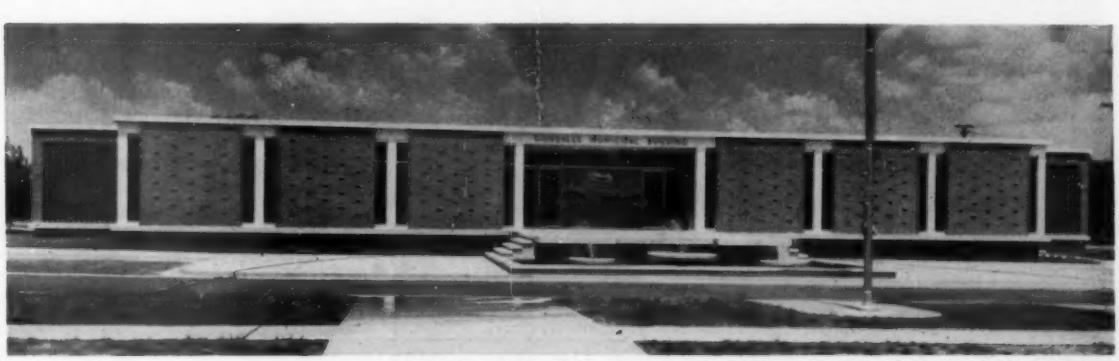
Small-City Municipal Building

The little Texas city of Gonzales recently completed and dedicated a new municipal building that combines, beauty, trimness, functionalism and economy.

It is an all-masonry structure with a reinforced concrete frame. It uses four 5-ton heat pumps for heating with electric heaters, built in, for supplemental warmth if necessary. A lighted water fountain in the front center of the building is a gift of the family whose grandfather, T. S. Walker, built the first water system in the city and was instrumental in building the first electric system. One of his grandchildren, Robert H. Walker, Jr., is the present mayor. A granddaughter, Mrs. Jennie Harless, turned on the first electric lights in the city when she was 5 years old, in 1893, and was present for this dedication.

The building provides an assembly room, a vault, a police room, the mayor's office, the city manager's office, a sound-proofed glassed-in billing room, a drive-in pay window, an accounting room, and a coffee room.

The building cost $120,000. The furnishings cost an added $7000.



Gonzales, Tex. built this modern and functional municipal building for $120,000.

Flexible Culvert Overcomes

Cost considerations rule out other types of construction for spanning deep valley

By **M. A. COUSE**, Project Engineer
Proctor & Redfern, Consulting Engineers
Toronto, Canada

With the culverts already in place, the backfill is begun by placing granular material around the tubes. Note perforated pipe used for sub-drainage.

Access to the Bayview Village subdivision of Metropolitan Toronto, an area of exclusive homes in the $25,000 to $50,000 range, necessitated spanning a valley approximately 75 feet deep and 600 feet wide at the top. In 1955 the upstream watershed comprised 1,500 acres of farmland with relatively low runoff. However, rapid development within this watershed caused an increase in runoff and a heavier stream flow in the valley.

We first considered a parabolic arch on continuous footings but a visual examination of soil samples aroused our concern for the allowable bearing capacity. Complete soil tests showed that the soil in the valley bottom broke down completely in the presence of water, dropping in bearing value from 2¼ tons per square foot to zero. Cost considerations ruled out the use of foundation piles for the concrete arch.

Culvert Selected

We concluded that a culvert would do the job, but that it would be founded on a highly active clay, which would give adequate bearing only under the existing moisture conditions.

Stringent precautions would be necessary, both during and after construction to prevent entrance of water, which might cause collapse of the clay.

A flexible Armco Multi-Plate culvert design seemed to be the answer. To keep the depth of flow as low as possible, we selected twin 126-inch barrels. They would bear an earth fill 42 feet deep with a top width in the direction of stream flow of 66 feet. The bottom of the fill, determined by estimating the natural angle of repose of the fill material, called for a culvert length of 343 feet.

Because of the possibility of water affecting the bearing capacity of the sub-soils, we decided to give the tubes a longitudinal camber. The average gradient of the valley at this point was 1.2% and it was finally decided that a culvert grade of 1.5% would be desirable for hydraulic reasons.

In constructing the tubes, we gave the upstream half a fall of one foot with an initial camber of 1.61 feet given to the invert at the

mid-point. This proved to be ample, for settlement ceased at 0.31 feet, leaving most of the camber in both tubes.

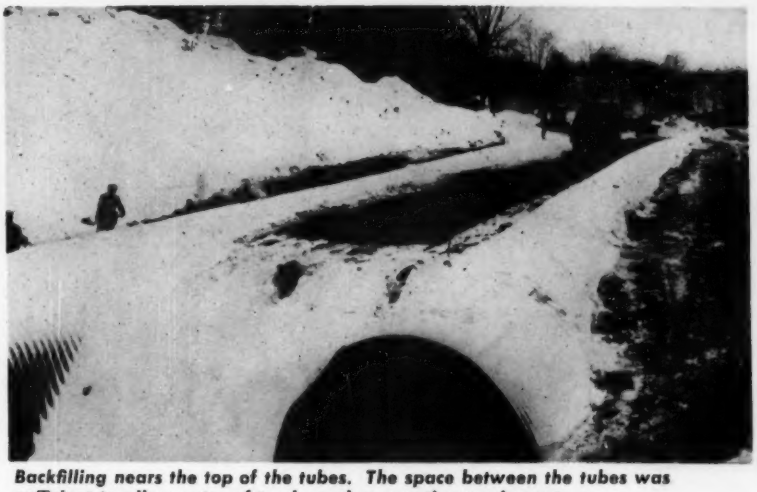
Load Designed

The Armco Engineering Section determined the structural requirements of the culverts to meet load conditions. Their design called for 3-gauge metal for the center 112 feet, 5-gauge metal for the next 32 feet outward toward each end, and 8-gauge metal for the last 86 feet on each end. During fabrication, the entire structure was ellipsed 5% vertically. In addition, the center 140 feet of each tube was strutted during construction of the fill. Both of these are common measures taken to restrain the deflection of large diameter corrugated metal structures.

Imbedding the tubes in granular material permitted flexing while maintaining uniform support. The width of granular fill outside the barrels was stipulated as one diameter. Although the tubes could have been placed together as close as ½ diameter, we left 11 feet between them to allow a self-propelled wobbly-wheel roller to compact the fill.

Springs

Springs encountered during excavation required the installation of 8-inch perforated Hel-Cor pipe as a sub-drain along one side. Hauling and compaction of the earth fill began as soon as the granular fill was in place. A five-week strike in the trucking industry delayed the start of this work until December 1st.



Backfilling nears the top of the tubes. The space between the tubes was sufficient to allow entry of trucks and compacting equipment.

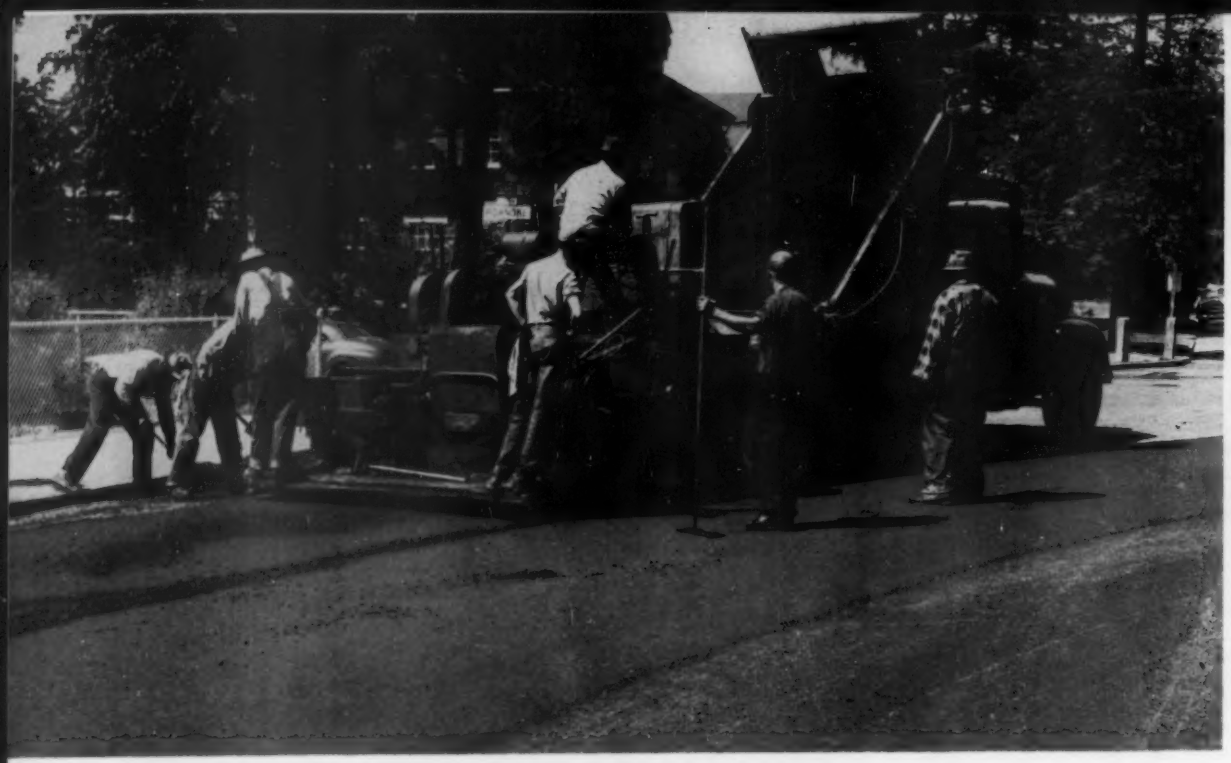
Rigid control exercised during compaction required that the frozen surface material be ripped off the borrow areas and discarded each morning. Earth moving came to a halt in mid-January, when approximately 15,000 cubic yards were in place.

This was enough to hold the culverts against the anticipated peak flow. Interlocking sheeting was driven at both ends to act as cut-off walls and to eliminate the danger of undercutting due to scour. The earth plugs were then removed from both ends and the stream diverted into the culverts ready for the spring runoff. The fill was completed in the spring of 1957 and the vertical struts left in until settlement had ceased in the spring of 1958.

The success of this installation stemmed largely from the extreme care used in compacting the granular material around the twin culvert barrels, from the control of water encountered, and from the rigid enforcement of compaction requirements on the clay fill.

An Armco construction crew erected the culverts and local contractors handled the balance of the work. The author served as project engineer for Proctor & Redfern, consultants on the project.

A view of the completed fill with Bayview Village subdivision in the background. Eventually the fill will be landscaped.



20 Years of Street Resurfacing

Well established program provides 20 years of new life to some 25 miles of streets annually

By **JAMES ROBERTSON**
Principal Assistant
City Engineer
Seattle, Wash.

Seattle has been resurfacing its streets since 1939. However, the acquisition of a surplus United States Steel asphalt plant in 1945 permitted us to step up the quantity of work done and since then we have averaged about 25 to 30 miles of resurfacing each year. In the past 14 years our street department crews resurfaced approximately 350 to 375 miles of streets or about a third of the paved street mileage.

A great portion of this work corrected a considerable period of neglect of brick and asphalt pavement. Something like 18% covered unpaved street railway sections. This resurfacing will require replacement in the future to maintain smooth streets and to avoid excessive patching costs.

Now that we have pretty well caught up with our back log of work we can look forward to a steady maintenance program each year. Maintaining the existing

Municipal crews handle the entire resurfacing job except that rental of the planer-burner includes the machine operator.

Most of Seattle's street resurfacing to date has been on old asphalt streets (left) or on old stone block or brick streets (right). The brick street is being covered with asphalt containing a natural rubber additive.

resurfaced areas alone will require about 200,000 square yards annually, and before a second resurfacing is accomplished, some places will require a third resurfacing.

In addition, many of our concrete streets will require attention, for we have been laying concrete pavements for 35 years. The amount of concrete resurfacing will gradually rise until about 1968, and from then on will remain quite firm at about 200,000 square yards per year.

The City of Seattle took over an existing asphalt plant in 1912. This plant was rebuilt and modernized in 1929, and as previously mentioned, a new installation of larger capacity was acquired in 1945. Until 1939, all material went into patchwork, and today we still use about 16,000 tons annually in maintenance work other than resurfacing. The latter includes planing, adjusting castings, removing brick or stone and removing rails.

Over the years various contractors have complained about the city operating its own plant. This led to a recent investigation concerning the economies of such an operation. Replies from four cities operating their own plants plus our own statistics are strikingly similar in that all feel an annual production of 50,000 tons is an economical size of operation. Although our production has been below this break-even point for the past few years, we predict our annual need will increase to about 75,000 tons by 1980. (See Table I on the next page).

It is essential that we have an asphalt plant to produce approximately 15,000 tons of numerous variations of several standard and special mixes for maintenance operations. Such mixes, especially when required on short notice for emergency work, are often difficult or impossible to obtain from private contractors.

Our asphalt plant, in maintenance operation, differs greatly from that of the private plants in this locality. In addition to producing asphaltic concrete, we produce:

1. Sheet top — a mixture of asphalt and sand. This is used principally for patching sidewalks where a durable feather edge is required.

2. Fine mix—a mixture of asphalt, sand, and a 5/16" maximum size crushed aggregate. This is used on pavement patches, which must feather out at the edges, and also around the edges of resurfacing where it feathers out to meet other pavement. We are able to make this fine mix by including a crusher, especially for this purpose, in our plant.

3. Plant mix—a mixture of cutback (MC), asphalt, sand, and crushed aggregate. This material is similar to asphaltic concrete except that it is much softer. It has many uses, including the patching of oiled roads and temporary cover over utility cuts. This material may be placed hot or cold.

Our plant has a 3,000-pound mixer and is capable of producing

about 700 tons during an eight-hour day.

It is manned by a plant operator II in charge of three plant operators I to handle the mixer, firing, and other miscellaneous duties. Two of the plant operators I are employed on different shifts to man the boiler and have the plant in readiness. One laborer handles the feeders, and one crane operator unloads aggregates from scows and rehandles aggregates as needed. One clerk handles bookkeeping and dispatching.

We consider it essential to plane asphaltic concrete, is about ¼ inch deep per pass. One pass usually suffices in the center of the street, but four to five passes are often required at the curb so that after resurfacing 2½ to 3 inches of curb remains. A normal day's operation covers between 6,000 and 7,000 square yards. The work crew consists of the planer operator, a foreman, front end loader truck with operator and one laborer.

We also use the planer burner to smooth the riding qualities of asphalt streets that are rough but otherwise in satisfactory condition.

The completed job provides a smooth riding surface and adds about 20 years of useful life to the pavement.

all asphalt streets prior to resurfacing, using a planer-burner rented each year from the Pavement Planing Company of Salt Lake City, Utah. The rental fee is $225 for an eight-hour day, including operator, fuel, and other operating and maintenance costs. It is used about 45 days during the early part of each year's construction period.

The planer burner levels off and removes the oxidized street surface; eliminates wide crack openings that frequently contain grass, earth, and other inert materials; provides a better bonding surface; and maintains adequate curb heights which, in some cases, have been almost eliminated by previous resurfacing jobs.

The cut is 59 inches wide and, on In such cases, resurfacing can be postponed.

Before resurfacing brick or stone, we remove the brick or stone wherever it is loose. Brick laid on sand cushion is generally loose, whereas that laid on grout cushion is nearly always tight and need not be removed.

Resurfacing Procedure

Following the above mentioned preparatory work, all castings are raised, adjusted, and wherever feasible riser rings employed to bring manholes to the new grade. We then apply a tack coat of RC-O asphalt just before we start resurfacing.

A Barber-Greene spreader applies the plant mix material. The field laying crew consists of a foreman, two roller operators, one spreader operator, two laborers on the screed, two rakers and three laborers for intersection spreading and miscellaneous adjusting, two laborers as flag men, and two laborers and a truck driver for painting and setting castings.

We have found it necessary to have two men adjusting the screed, one on each end, to meet the exacting requirements of street intersection grades. Two men, of course, would be unnecessary on straight-of-way work. We also consider it essential to have two rollers to secure proper compaction. One 10-ton Buffalo-Springfield 3-leg roller is used for break-down, and one 10-ton Buffalo-Springfield tandem roller is used for finishing.

City trucks are allocated as needed for hauling asphalt. Trucks vary in capacity from 4½-ton to 7½-ton, and their number depends on the haul. For instance, a job close to the plant would require only three trucks; while a job which was five miles from the plant would require eight trucks.

Cover Rate

Back in 1939 we started with a cover rate of 16 square yards per ton and later reduced this to 13½ square yards per ton. This proved to be inadequate and by 1942 we adopted a standard of not more than 9 square yards per ton.

At the time we started resurfacing work, very few people knew much about the design of asphalt surfaces Besides using too little material, we also started out with an inferior grade but continued to improve the mix until 1949. Thus the older mixes are less durable and will have a relatively shorter life. Today's resurfacing adds about 20 years of new life to the street.

Table I
Annual Plant Output

Year	Total Asphalt Production In Tons	Resurfacing Costs Per Ton
1946	61,000	$ 5.62
1947	90,000	5.70
1948	92,000	5.67
1949	69,000	5.80
1950	73,000	6.64
1951	57,000	6.33
1952	60,000	6.72
1953	43,000	6.90
1954	27,000	8.04
1955	26,000	7.73
1956	31,000	9.40
1957	33,000	10.53
1958	41,000	9.06

Miss Fletcher typing six carbons of a monthly highway report at left and, at right, using an Underwood Sundstrand 10-key adding machine to check equipment rental fund accounts for the monthly audit.

Adding and Typing A County's Highway Records

The machines are efficient and convenient

By PAT THOMPSON
County Engineer
Douglas County
Wenatchee, Wash.

"Fire in the hole," shouted the construction foreman, whipping his arm downward. The powder monkey twisted the plunger on the blasting machine and a hillside disappeared in smoke, dust and explosion. Another Douglas County highway construction project was well underway.

But a great deal of work had to be done before the project reached this stage of actual building. And a great deal more administrative work will have to be done before the project is completed. For Douglas County lies nestled against the sloping foothills of the Cascade Range. Its 1786 square miles (an area larger than the state of Rhode Island) are served by 1657 miles of rural roads. Known as the Big Bend region of the Columbia River, the plateau area produces between 4 and 5 million bushels of wheat yearly. Most of this is transported through huge semi-trailer rigs requiring that roads be built for high speed, heavy weight traffic.

In our Columbia River valley area, we are blessed with five of the world's largest hydroelectric plants, beginning with majestic Grand Coulee Dam, the largest of all. This is the fourth fastest growing region in the Pacific Northwest, with streets formerly carrying 100 automobiles now reaching 9,000 to 10,000 vehicles per day. Consequently, our construction had to spread over both the speed-weight and volume problems.

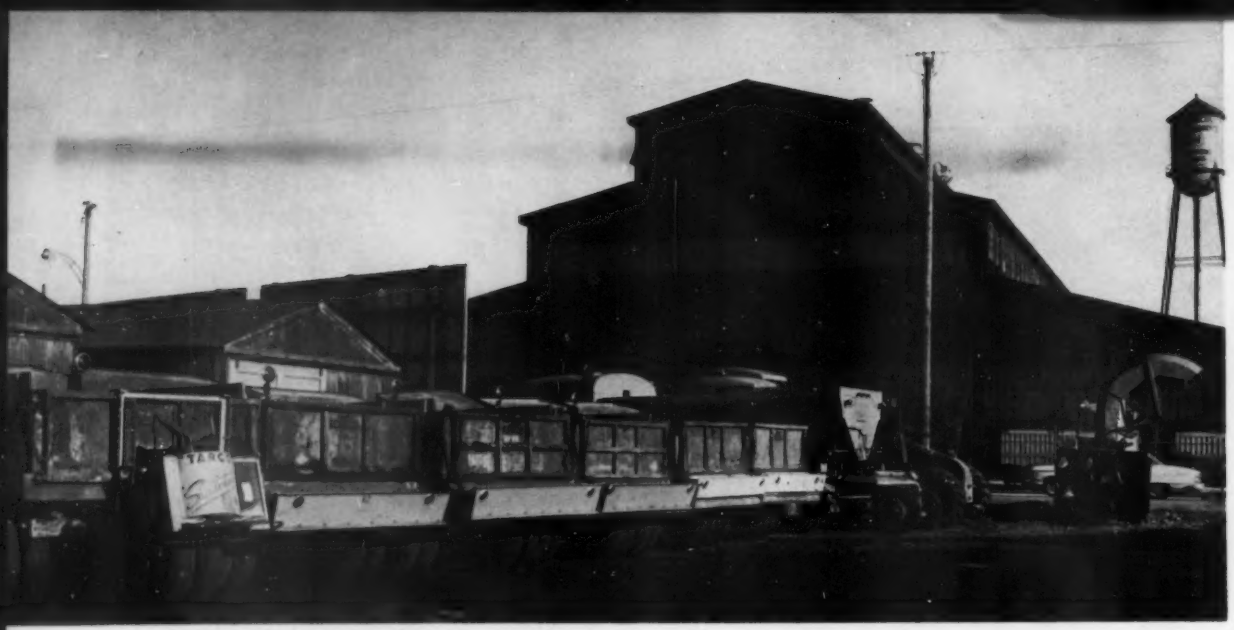
In conjunction with varying topographical, residential, soil, and climatic conditions, this meant writing individual project specifications for each job. To avoid costly and time-consuming litigation, all work proposed for the contractor must be spelled out in exact terms. Any vague specifications involving the spending of money, ours or the contractor's, can involve our department in interminable petty arguments. Consequently, we must furnish complete specifications for as many contractors as wish to bid on the projects. These must be fully legible, with no blurred or smeared figures that can be mistaken on bid calculations. A smeared number two mistaken for a number five, where thousands of dollars are involved, can end up as a court case.

Once projects are underway, administrative work must also start immediately. Since our funds are tight, reports must get out quickly so that no out-of-line expenses will slip by and any fund discrepancies can be detected immediately.

In county force day labor, maintenance and repair work funds are allocated on a pro-rated allotment and balanced monthly. The paper work necessary to keep these accounts controlled requires daily equipment sheets, shop repair orders, store requisitions, vouchers, payrolls, and balance sheets. All items are posted daily and some thirty accounts balanced.

Miss Fletcher, our accountant-secretary-receptionist, conducts her accounting chores efficiently on an Underwood Sundstrand 10-key adding machine. In the course of a year's highway operation, over $700,000 in expense calculations will go through her accounts. All are handled speedily and accurately through the use of our Underwood machines. Ease of operation allows the accountant to concentrate on her work rather than on the operation of the machine.

When not accounting or advising the public, Miss Fletcher must also type all our reports, letters, statements, and stencils for duplication. She does not appreciate fuzzily cut stencils lasting for only 3-4000 copies, nor a typewriter that does not make a good number of clear carbons. We bought her an Underwood typewriter because, she says, "it has a free, easy action that doesn't tire my hands after a day's typing." We have made up to 10,000 copies from our clear-cut stencils, or about two and a half times the copies we were formerly getting.



A portion of Hammond's snow and ice control equipment ready to go on short notice.

Winter Is Too Late To Plan for Snow

Spring and fall equipment checks and pre- and post-storm critiques help Hammond, Ind. win the snow and ice control battle

By **CLARENCE A. MOTZ**
Former Commissioner of Streets and Alleys
Hammond, Indiana

It's never too early to start thinking of snow and ice control. Each spring after we are positive that winter equipment is no longer needed, the Mechanical Department commences to check each piece of equipment. All worn parts are replaced and each loose piece is tagged and numbered to correspond with the other parts. We then scrape and paint all metal parts and store the equipment for the following winter's operations. This is followed by an inventory of spare parts and the immediate placing of an order so that we have ample replacement parts on hand for the first two months of next winter's work.

After the 15th of September personnel of the Mechanical Department take all equipment used during the winter from storage and recheck to make sure all the corresponding parts are available and also to see if any changes are necessary. We had one experience of an oversight resulting in the loss of time because some equipment was needed, but was not caught in the re-check.

Around October 15th, the Director of Public Services calls a meeting to review the previous year's snow operation and discuss the present year's plans. Notes made during the course of the winter operation enable the men present to discuss quickly both good and bad points of past work in an effort to increase efficiency during the coming winter.

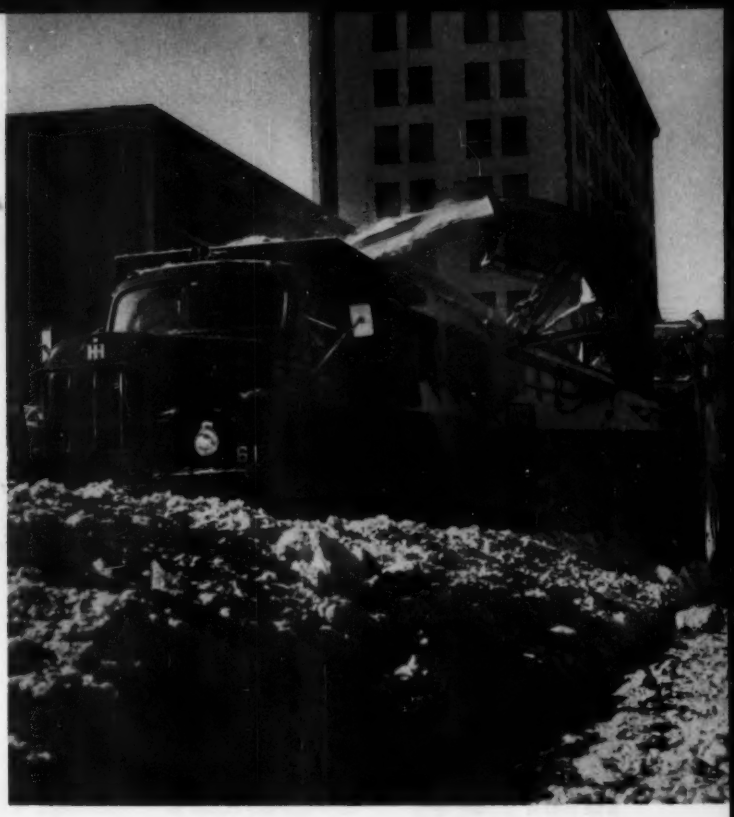
Also at this meeting we work up a map of the city indicating the boundaries of the 10 snow and ice removal routes. The map specifies, for each individual route, the streets that are to be salted or plowed and the sequence to be followed. This procedure permits a quick and easy briefing of the substitute driver should the regularly assigned equipment operator fail to report for duty. Each foreman has a copy of the map and the director retains one copy in his office.

In conjunction with pre-scheduling of operations, each area foreman is notified of danger spots via the police radio. This close control plus assistance from the Police Department constitutes one of the greatest factors in better efficiency and a reduction in overtime man hours. Basically, our philosophy here in Hammond is that we can minimize our problems by staying ahead of trouble.

Organization

In 1957 we contracted with the private meteorology concern of Murray & Trettle, Skokie, Ill., to provide weather service 24 hours a day, seven days per week, from the first snow in fall to the last

All equipment is checked, worn parts replaced, and all metal painted in spring. Another check is made in late summer or early fall.



The city's Sicard snow blower loads a 12-yard rented truck following an 8-inch snowfall

snowfall in spring. They keep us informed of coming snow and sleet storms by calling this information into the Street Department office from 6:00 A.M. to 5:00 P.M. and to the home of the department's general foreman during the night. If he is unavailable, the Director of Services is contacted. If neither is available, the information is given to the Police Department.

We have a standing rule in the department prohibiting the general foreman and the director from leaving the city at the same time during the winter months. This system is particularly important on weekends. Thus the city is assured of having top supervision constantly available should a crisis arise requiring an immediate decision.

We also post a weekly list of drivers and helpers who are to be on call after regular working hours. This assures us of ample manpower to operate all necessary equipment. If a man fails to report that he will not be available and is called, he is dropped from the overtime roster for 30 days. We have a union and all working time over eight hours a day is paid on a time-and-a-half basis. Double time is paid for Sundays and holidays. With this system we have personnel available at all times.

As director, the writer spent as much time as possible on the streets during a storm to observe snow removal and ice control operations. A radio on the same frequency as that of the Police Department permits immediate contact with regard to any change in operations.

Ample Equipment

We have in use nine Swenson spreader boxes, one Scotchman salt spreader, a 15-yard body with Baughman rotary spreader, one Sicard snow blower, three graders and seven plows. For snow removal in the downtown business area we rent eight 12-yard, six-wheel trucks and two motor graders. We have found that the Austin-Western four-wheel steer, four-wheel power, because of its maneuverability, is most adaptable to our operation in opening streets and windrowing snow.

Last winter 32 inches of snow fell on Hammond from November 28th to February 2nd, with eight inches falling between January 18-22. At no time were any of our arterial streets closed. However, with 405 miles of city streets under our jurisdiction, we were forced to rent additional graders to assist in opening residential streets.

Our snow removal crews operate most efficiently in the business district between the hours of 11:00 P.M. to 7:00 A.M., when traffic is at a minimum. After one of last year's storms we removed 400 loads or about 6,500 cubic yards of snow from the business area in two nights.

From November 28th to February 2nd our crews applied about 2,500 tons of salt and 3,000 cubic yards of cinders. We use salt whenever possible for snow and ice control, resorting to a mixture of salt and cinders when the temperature drops to zero. The use of spreader boxes eliminated the helper on each truck and enabled us to cut man-hour operations on salt spreading by 50%. Helpers are employed only on those trucks handling a combined snow plowing and salting operation.

We have come a long way in improving the efficiency of our snow and ice control operations for two main reasons. First, our system of reviewing the problems before and after each storm shows us our mistakes as well as good points. Secondly, both supervisors and helpers are paid on an hourly rate and we feel this gives the incentive for all employees to cooperate to their fullest extent.

All our employees agree that public safety is a paramount consideration in snow and ice control and work with that thought in mind. Efficiency is of the utmost importance; the writer maintains that staying ahead of the storm is 50% of the battle.

The Crescent Beach service area is strictly limited by a 50-foot access road (background). The comfort station occupies very little of the area.

City Solves Narrow Beach Sanitary Puzzle

Campaign promise generates teamwork that produces comfort station trailer for Glen Cove, N. Y. beach without sanitary facilities

A campaign promise made by Joseph A. Suozzi, Mayor and Supervisor of Glen Cove, N. Y., when he was seeking office, proved more difficult to keep than he had suspected for he guaranteed rest rooms for the city's Cresent Beach on Long Island Sound.

The beach, which has a mere 50-foot frontage, had operated without sanitary facilities during its entire history. It serves hundreds of people on hot days and the problem of sanitary facilities became increasingly critical. A study of the situation by city staff revealed several reasons why previous city administrations had been unable to provide them.

Almost at the water's edge is a high stone bulkhead that terminates the road leading to the beach. The road occupies the full 50-foot right of way, which in turn limits the beach-front service area. Land on one side of the right of way is part of an estate, and unavailable to the city except by condemnation—a difficult and questionable procedure because of the nature of the proposed facility. On the other side of the road, property belongs to a naval architectural institution, with similiar obstacles to acquisition of enough land to provide the needed structure.

Mayor Suozzi further discovered that, even with possession of the land, building a permanent comfort station presented too many disposal problems to justify its construction. There is no sanitary sewer near enough to hook into economically. Soil conditions and the proximity to bathing facilities ruled out adequate disposal by septic tank or cesspools.

Mobile Station

Mayor Suozzi decided that the only solution was to have a mobile comfort station with a portable receptacle that could be transported to the city's sewage purification plant for emptying and cleaning. Searching for commercially available units, he enlisted the aid of Frank P. Festa, Commissioner of Public Works, who conducted an investigation of the various mobile comfort station trailers that are offered to contractors for use on large construction projects. But all units proved more costly than the meager budget allocation would allow.

The officials then approached Frank Feranda of De Lackner Helicopters, Inc., Mount Vernon, N. Y., who studied the problem and, in consultation with both Suozzi and Festa, designed the unit which was to be the answer to Glen Cove's narrow beach sanitary problem.

House Trailer Conversion

Design and fabrication began with purchase of an 8-foot-wide, 17-foot-long Model 17-U International house trailer shell, altered to provide access on both sides serving two individual toilet cubicles and a utility room.

Partitions were installed in a T-shaped pattern, with the full width at the front of the trailer boxed off as a utility room and entered from the men's side of the vehicle The stem portion of the "T" separates men's from women's accommodations. Chemical toilets serve both cubicles.

Biggest job was design and fabrication of a suitable portable trailer vessel that could easily be disengaged from the comfort station and towed for emptying to the purifica-

A towable chemical receptacle, suspended below the trailer has a demountable hitch to allow hauling to the sewage plant.

tion plant. Using ⅛-inch hot rolled steel plate, a tank 18 inches x 36 inches x 60 inches was fabricated.

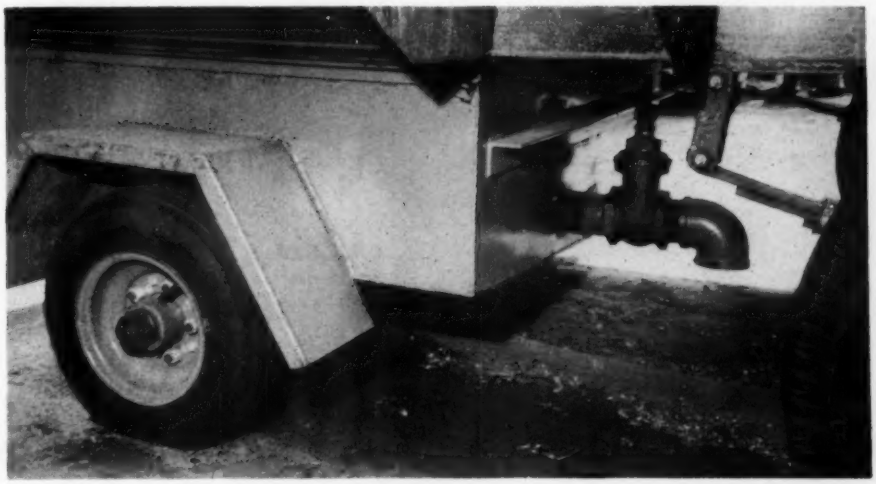
Tank capacity when half full of chemically charged water is 80 gallons with an approximate weight of 690 lbs. The floor of the baffled interior is reinforced and sloped from the sides toward the center and from one end of the container toward a 2-inch, gate-valved drain. In the vertical collar inlet from the chemical units is a butterfly valve to prevent splashing of contents while in transit.

The receptacle is vented by means of an outlet at the top of the tank which engages a 4-inch x 12-inch ventilator duct attached to the rear of the trailer and extended 9 inches above the roof. Cubicles also are ventilated by wind-action vents through the trailer roof. The receptacle is suspended beneath the trailer by flanges that are bolted under the floor and run the full length of the tank. A removable trailer hitch provides for towing by a municipal truck.

The carriage for the receptacle is provided by a leaf-spring-mounted axle supported by two aircraft wheels with low-pressure pneumatic tires.

Total cost of the unit was less than $4,400, considerably under the cost of the cheapest of the trailers considered originally. The facility has been well received by public and city force alike, for there has been no fly problem, no odor nuisance has been reported, and while periods of service could be extended substantially, emptying, cleaning and recharging of the receptacle have been carried on at two-week-scheduled intervals.

Mayor Suozzi reports that officials of the city have been enthusiastic about comments by the public. Swimming has been made more pleasant for beach users and a delicate problem has been solved without necessity for complicated legal entanglements of land acquisition.



The receptacle is provided with a 2-inch drain, operated by a gate valve. The bottom of the tank interior is sloped from the sides and from the sides and one end toward the drain.

Montebello's Growth

By **EARNEST D. LINDSAY**
City Administrator
Montebello, Calif.

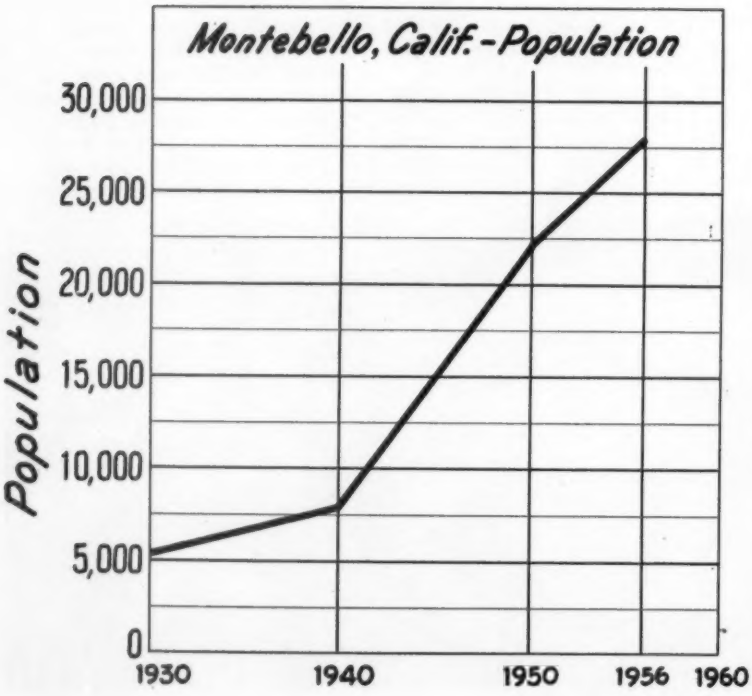
The vendor information file is kept on Remington Rand Kardex equipment.

Earnest D. Lindsay

Each department in the government of our medium-sized city used to look for its own sources of supplies and equipment and do its own buying. The consequences of this unorganized system began to hit home with the mushrooming growth which came with Montebello's location in the heart of Southern California's population boom.

Following World War II, growth hit so quickly that the older administrative form of our government became swamped. Busy people bought what they needed when they wanted it and generally did their best to keep their heads above water. Thinking of things in terms of the needs of individual departments, this plan was good enough. Overall, however, things broke down through a failure of communications between the civil service people and the elected council officials who were responsible for taking care of the interests of the taxpayers.

In late 1956, we changed to our present city administrator form of government and moved to establish a set of central working controls. A management analysis was made with the aid of experts from the Remington Rand Business Services Division. As part of our overall administrative streamlining of the city government, we established our first central purchasing facility in 1958.



Centralized Purchasing

All dealings with vendors connected with buying, delivering and installing materials or equipment are supervised by this one department. The new purchasing group receives and checks on all goods delivered to the city.

Our newly-created Purchasing Department is located in newly-constructed offices in the city's maintenance yard. It is near the stores section which issues supplies for the upkeep of the City of Montebello's 20-unit bus fleet. The same garage also maintains our police cars and fire department vehicles. As might be expected in a city government, about a third of the work of the Purchasing Department involves buying office and administrative supplies and equipment.

Considering that Montebello has a total annual budget of more than $3,000,000 and that well over $1,000,000 is spent on supplies and equipment, it is easy to see that this centralized set-up led quickly to major volume discounts.

Volume Advantages

Formerly, when a mechanic determined that the engine of one of our buses needed a new set of sparkplugs, he went to the nearest auto supply store and bought six plugs. Now, we buy on a price schedule projected according to annual needs. We keep a two-month supply on hand. The mechanic saves time, the taxpayers save money.

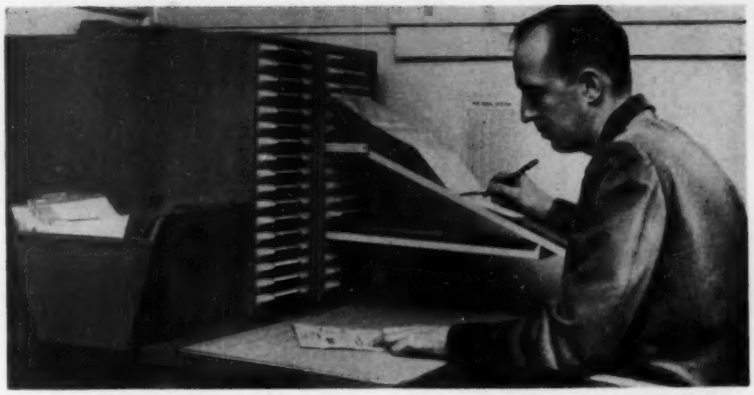
Similarly, volume buying saves us about 20% per set for the tires used on our buses.

In office supplies, we found individual departments were duplicating each other in stocks of such items as scratch pads, pencils, typing paper and so on. Throughout the city, we used to stock almost 100 different items of stationery. Now, we take care of the same needs with only 20 items. We have less

Compelled Central Purchasing

money tied up in inventories and are able to buy what we need at substantial savings.

To assure smooth operation of this department and to exercise complete control, we called in Remington Rand systems specialists to help us set up a complete record keeping procedure. Under this system, our purchasing buyer, Glen Witham, has a complete guide to every item which the city stocks set up in Remington Rand equipment. Each item is assigned a separate Kardex pocket. The file is arranged alphabetically according to product name. Indexing is visible at all times, since the descriptions on the insert forms appear in the transloid tips at the edges of the Kardex pockets.



Perpetual inventory for all city stores is kept in this Kardex installation.

In the top section of these Kardex pockets is a listing of the specifications of the product and spaces for indicating the names and addresses of vendors from whom it can be purchased. On a form which fits into the bottom half of the pocket, we accumulate a purchasing history for the item.

Whenever our Purchasing Department gets a requisition for an item, the clerk need only turn to the appropriate Kardex pocket and note information for the guidance of our purchasing buyer. If there is an open contract pending with a supplier of the item, it is simple to make out a new purchase order. If it is an item which must go out for bid, all the vendors' names and addresses are in one place.

After a purchase order has been placed or let, appropriate notations are made in the prescribed spaces on the Kardex forms. A copy of the purchase order itself is placed in a Remington Rand follow-up folder which is inserted, according to order number, in an expediting file. A visible signal in the top margin of each folder is adjusted to indicate the expected delivery date of the merchandise covered by the order. Once a week, simply by glancing at the top margins of these folders, our purchasing people can spot those outstanding orders which are due for follow-up.

The purchase order copy in the follow-up folder is also compared with a copy of the receiving report after the merchandise is received. Ultimately it is sent to our accounts payable clerk as authorization to release vendor invoices for payment.

As a continuing monitor of purchasing activity, we keep a master file, alphabetically according to vendor, under the color-coded Remington Rand Variadex system. This filing method serves both to speed the search for records and to make refiling more accurate. In a single folder for each vendor, we have all correspondence with the company together with copies of all purchase orders issued in its name.

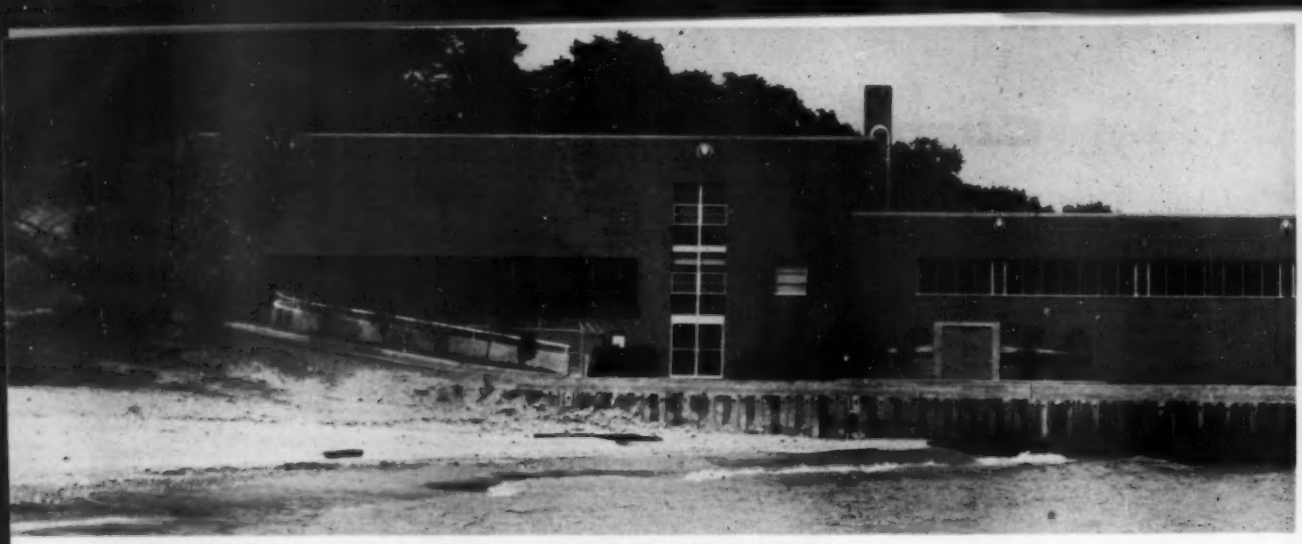
The actual merchandise itself is controlled through another Kardex record. Set up in our stores section, this file also has a separate pocket assigned to each item. In the bottom half of each of these pockets we keep a perpetual inventory record. Each time an item is issued from or received into stock, an appropriate entry is made. With each entry, the current stock balance on hand is calculated and entered. Any time a current stock issue brings the level below set balances noted on the Kardex forms, a purchase requisition is prepared automatically.

The top half of each pocket has a form designed to accumulate an average cost for the item each time a new shipment is received. With this record we monitor charges made by vendors and keep a running control on our inventory in terms of dollars as well as in number of items.

In another sense, this Kardex record gives us the same caliber and degree of control over receiving items and entering them into stockroom inventory as the initial record provides for the actual buying.

The net effect is a closed-circuit clerical control system. At any given time, we have a full picture of the city's supplies inventory and buying commitments. These control procedures pay for themselves several times over in the course of a single year's operations.

Each purchase order is placed in a follow-up folder for monitoring of vendor performances.



Construction of Lake Forest's water plant against a bluff along the lake shore permits the chemical loading dock to be 18 feet above the main entrance on the level of the chemical storage floor.

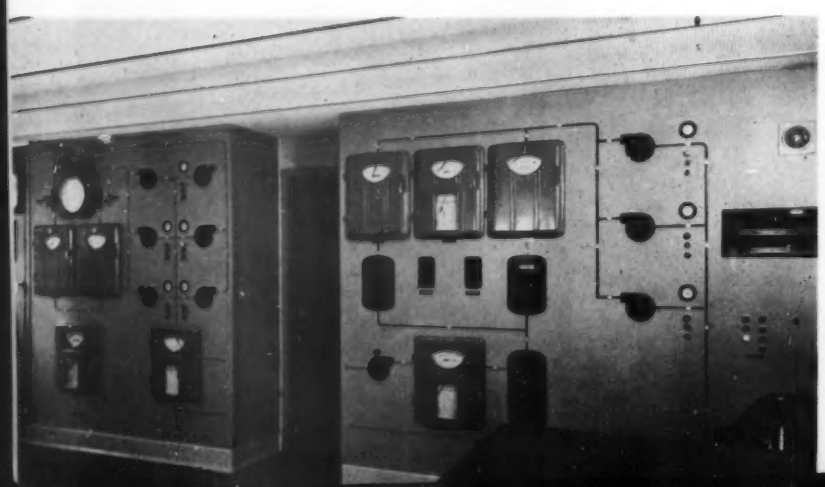
An Old Plant Gets New Life

Lake Forest, Ill. rebuilds around the old filter building, provides increased capacity, complete automatic control

By **G. LELAND WATSON**
Superintendent
Water Department
Lake Forest, Ill.

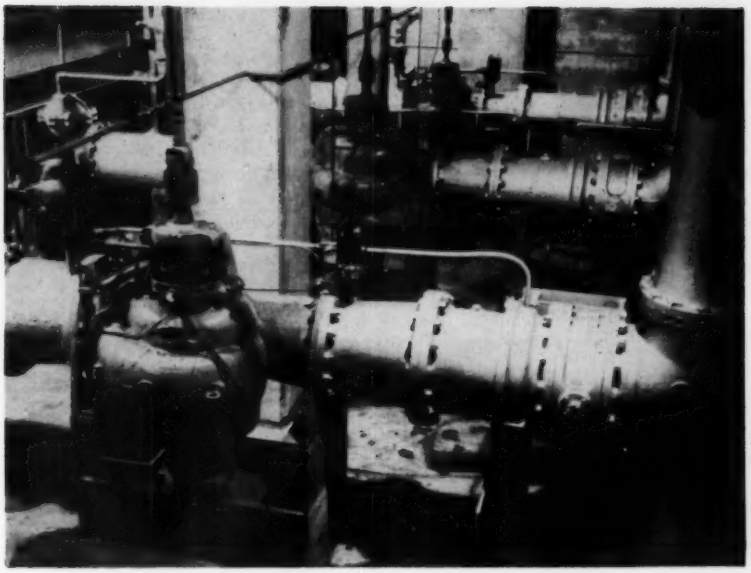
Lake Forest's enlarged and modernized water treatment plant was literally built around the old filter building that now houses all the facilities formerly contained in two separate structures. In going through the new plant, even the casual observer will note several unusual features, and the initiated will find many more. The features, that reduce maintenance costs, upgrade water quality, and improve employee morale, include the following:

1. A graphic panel board installed in the operator's office, which, by means of colored stripes and colored lights, traces the path of the water from the intake to the distribution system, indicating which pumps are operating, which valves are closed, open, or partially open.
2. Automatic control of all alum, Bentonite, carbon and sodium silicofluoride feed machines from meters.
3. Introduction of carbon, alum, and Bentonite (when used) ahead of low lift pumps, and prechlorination after mixing, at the entrance to the sedimentation tanks.
4. Wide use of aluminum through the plant, including exterior doors and windows, interior glazed partitions, railings, ladders and all electric conduits both exposed and imbedded in concrete. Also the use of reinforced structural actinic glass set in aluminum frames in the filter room because of its heat absorbing and glare reducing qualities.
5. A combination gas stove, refrigerator and sink unit in a kitchen furnished with table and chairs to provide an attractive place for oper-



Left:
This graphic panel board, fabricated by Panellit, Inc., of Skokie, Ill., traces the flow of water through the plant and indicates pump operation and valve positions.

Right:
The new mixing basin contains four compartments each containing a variable speed vertical shaft mixer.



The low-lift pumps are located 19 feet below lake level. Motors are on the floor above.

ating employees to eat and relax.

6. The use of poly-styrene ⅝-inch-thick eggcrate ceiling in halls, office, laboratory and men's room to cover the structural beams, pipes, conduits and fluorescent strip lighting and to diffuse the light.

Multi-Level Plant

The building contains the following on five floor levels:

	Above or Below Lake Michigan
Raw water pumps	**19 feet below**
Filtered water suction and discharge piping	**10½ feet below**
Electric control center, emergency generator, raw water pumps	**1½ feet below**
Chemical feed machines, mixing, sedimentation, laboratory, office space	**13½ feet above**
Chemical storage	**24 feet above**

Three Peerless vertical split case pumps of 2.5, 5.0, and 7.5 mgd capacity handle all raw water pumping. They draw water through a steel pipe header out of an existing intake well fed by a 24-inch intake extending 3,000 feet into Lake Michigan. We expect the intake to be adequate until 1970. Simplex pneumatic rate controllers operating butterfly valves in the discharge lines proportion the raw water between the old and new mixing basins. Venturi meters register the flow through each line, total the amounts, and control the Omega dry feed machines that feed alum, carbon and in some cases, Bentonite, into the raw water suction header ahead of the pumps.

In the old mixing basin of 105,000 gallons capacity the water travels through six compartments in an over-and-under pattern. Each compartment contains variable speed, vertical shaft mixers. The new basin has four compartments and a capacity of 230,000 gallons. Walker Process variable speed, vertical shaft mixers in each compartment mix the chemicals and water as it flows through the basin—also in an over and under pattern. Mixing time is 30 minutes at 15 mgd.

Chlorine is introduced to the water as it flows from the mixing basins to the settling basins. The three settling basins, with a combined capacity of 1,250,000 gallons, provide two hours' detention time at 15 mgd. These tanks are connected separately, making it possible to empty one at a time for cleaning without affecting the others. The settled water flows to the top of eight rapid sand filters, each having a rated capacity of 0.9 mgd. These were part of the existing plant which was built in 1927.

The filtered water is either stored at the plant or is treated with chlorine, ammonia and sodium silicofluoride and pumped into the distribution system or to the 2.0 mg underground storage tank located

about four miles from the plant.

Four Peerless pumps, two each of 2.0 mgd and 4.0 mgd; one 4.3 mgd De Laval pump; and a 1.4 mgd Lombard pump powered by a Continental gasoline engine provide ample high service capacity. They operate at 120 psi and discharge into two 20-inch lines through Chapman cone valves held open by the pressure in the pump headers. A break in the pump discharge lines or a sudden power failure will close these cone valves before damage can be done to the pumps and motors due to reversing direction. Pratt hydraulically operated butterfly valves are used as pump discharge checks on all raw water and high pressure pumps. Cutler-Hammer of Milwaukee supplied the motor controls and panel boards.

The high-service pump room includes both electric motor and gasoline engine driven pumps. High service capacity at the main plant equals 15 mgd.

Two 20-inch by 16-inch venturi tubes with Simplex meters and totalizers measure all high service pumpage. The totalizer paces the Omega sodium silicofluoride feeder.

The discharge lines empty into three transmission mains 24 inches, 16 inches and 10 inches in size and located in Lake Avenue 73 feet above lake level. Our recent improvement program also included strengthening of the distribution system through the laying of 24,375 feet of 24-inch and 20-inch Lock Joint concrete pipe water main and 1,248 feet of 14-inch and 5,800 feet of 12-inch Clow mechanical joint cast iron pipe. These mains, together with 26,700 feet of existing 20-inch and 14-inch lines, form a transmission loop around the city and provide an adequate connection for a 2 mg underground storage tank constructed in 1951.

The storage tank installation also includes a building that houses three De Laval electric and gasoline-driven pumps and a Golden-Anderson altitude and filling valve. All equipment is remotely controlled from the filtration plant by means of Control Corporation equipment and one pair of leased Illinois Bell Telephone Company wires. This control equipment starts, stops and monitors the three pumps, opens and closes the altitude valve for filling the tank, monitors the air compressor and vacuum priming connections to each pump, and transmits water level in the underground storage tank, distribution system pressure, and metered water pumped out of the tank. In addition, the equipment monitors the panel board for single phase operation and reports the position of manual disconnect switches on the pumps. The lines also provide a telephone channel between the two locations.

Duplicate power lines from the local private utility serve the station, making power outage a remote possibility. However, we still can fall back on a 100-kw Ideal generator driven by a Climax engine operating on propane fuel to run the low-lift pumps, wash water pump, chemical feeders, lights and small motors. The gasoline engine standbys will handle high service pumping in such emergencies.

Table I lists the capacities of the various plant units and gives other statistical data.

Of the approximately $1,620,000 spent for improvements, $1,500,000 came from revenue bonds sold in December 1956, and the balance came out of operating surplus on hand. We increased the water rates about one year prior to the bond issue, establishing a flat rate of 32 cents per 100 cubic feet for all water used except for those customers using in excess of 150,000 cubic feet per three-month period for all four periods of the year. In these cases the excess is billed at 24 cents per 100 cubic feet. The city is 100% metered, including parks, schools, churches, golf courses and municipal buildings.

Greeley and Hansen of Chicago designed the improvements and supervised construction of this program as well as all others since the city purchased the utility from a private firm in 1921. The author and his staff engineered the transmission mains. Harry von Huben served as resident engineer on the plant.

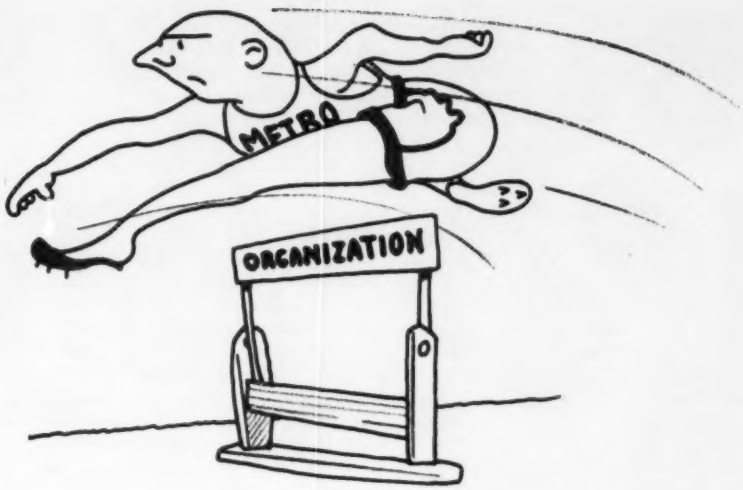
Table I

Unit Capacities

Intake	24-inch diameter—3,000 feet long. Approximately 9 mgd, depending on lake level.	
Low Lift Pumps		15 mgd
High Lift Pumps		
Station 1—Treatment Plant		15 mgd
Station 2—2 mg reservoir		5.6 mgd
Clear Water Storage		
Station 1—720,000 gallons		
Elevated —200,000 gallons		
Station 2—Underground—2,000,000 gallons		

City Data

Population	10,200	Services	2,552
Area	15.2 Square Miles	Mains	83 Miles



The Municipality of Metropolitan Seattle clears the hurdle of organization and in less than a year . . .

Metro Takes Action On the Sewage Problem

By **ROY W. MORSE**
City Engineer
Seattle, Wash.

The Municipality of Metropolitan Seattle, or Metro for short, came into being on September 9, 1958. It is a municipal corporation established by a vote of the Seattle area residents in accordance with enabling legislation enacted by the 1957 Legislature of the State of Washington. Although Metro's initial efforts are confined solely to metropolitan sewerage and drainage, the enabling legislation permits the conduct of six functions: water supply and distribution, garbage and refuse disposal, rapid transit, regional parks, advisory planning and sewerage and drainage. Basically, Metro provides the legal means whereby existing governmental units can act in unison. This unity of action is accomplished through the Metropolitan Council, which comprises 14 representatives of the elected officials of the component cities and the county, and a chairman chosen by the Council members.

In addition to the central city, Seattle, Metro contains 10 incorporated cities and towns and a substantial, fast growing unincorporated area of King County, encompassing in all, an area of 230 square miles. Metro's present population is estimated at about 715,000 persons and it has an assessed valuation of slightly over $900,000,000.

Considering that Metro had no funds with which to operate until April 1, 1959, much has been accomplished to date. On December 17, 1958, the Council appointed Harold E. Miller as Executive Director. Mr. Miller took over this position in February of this year and under his able direction Metro completed the many detailed duties involved in getting an organization under way. The month of July marked the beginning of the "action phase" of Metro's sewerage program.

Mounting Problems

Mounting sewerage and pollution problems led officials of the City of Seattle, King County and the State of Washington to undertake a jointly-financed metropolitan area sewerage and drainage survey in 1956. This study, conducted by the engineering firm of Brown and Caldwell of San Francisco, covered all significant facets of the area's sewerage and drainage problem, and the report recommended construction of a network of main and intercepting sewers, pumping stations and treatment and disposal works designed to provide wholesale sewerage service to the numerous sewerage agencies of the area. The ultimate system would provide service within a 585-square-mile area and would serve a population of about 2¼ million people.

It outlined a three-stage construction program: Stage I (1960-1970) estimated to cost $83,200,000; Stage II (1970-1980) $35,400,000, and Stage III (after 1980) $45,400,000. The report also set forth certain recommended principles to be utilized as a general guide in the provision of storm drainage facilities as well as design criteria and standards for both sewerage and storm drainage facilities.

Last April the Council adopted this recommended plan and design criteria and standards. In so doing, the Council established the policy of designing all future facilities with a view to providing service to the ultimate metropolitan area, regardless of the location of existing municipal boundaries.

In July Metro engaged the services of a joint engineering venture of Brown and Caldwell, R. W. Beck & Associates, Hill and Ingman, and Carey & Kramer. The last three are all Seattle firms.

Initial Design

Initial design involves an estimated $60,000,000 worth of construction, including major trunk sewer and treatment works to serve communities east of Lake Washington as

well as a major tunnel and treatment works primarily to serve the City of Seattle.

If construction moves according to schedule, 80% of the sewage now entering Lake Washington will be treated and discharged via a small stream into Puget Sound, within three years, and in five years practically all sewage will bypass Lake Washington.

Area Cooperation

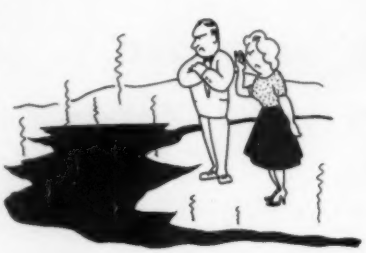
In addition to municipal and county government, other taxing units of government either wholly or partially within the Metro boundaries include eight school districts, 31 water districts, 14 sewer districts, 13 fire protection districts, two road districts, one public hospital district, a county-wide port district and a rural county library district. Thus, it is essential that cooperation be the by-word in implementing Metro's program, and fortunately, excellent cooperation prevails. Several municipalities within the Metro area, including Seattle, as well as several governmental units outside the area have already coordinated facilities now under construction with the over-all plan. In addition, where new facilities are being planned outside Metro boundaries, citizen groups are requesting that meetings with representatives of surrounding areas and with Metro officials be held to insure coordination of activities.

A loan of $100,000 from King County supports staff activities for this year. Of this $40,000 constitutes Metro's portion of an advance planning fund in support of present engineering activities. In addition the federal government provided an advance planning loan of $395,000. Next year's proposed budget of $110,000 for administration will be covered by the various participating agencies in amounts ranging from $33 for Beaux Arts to $88,055 for Seattle. Basic construction will be covered by bond issues to be amortized principally by means of a sewerage service charge.

Because financing will have a vital bearing on the future success of Metro, qualified financial consultants are now being sought to guide the engineers and the management in their efforts to begin construction at the earliest possible date and to insure the sale of bond issues at the lowest possible interest rate.

To fulfill Metro's ultimate requirement for a highly competent engineering and technical staff, a working relationship has been established with the consultants whereby engineers and other technicians who will later fill the key positions in Metro's engineering organization are being employed by the consultants and given broad, on-the-job training. Thus, promising candidates now seeking a permanent association with Metro will be trained under highly competent supervision and will be available to Metro as needs arise.

Because the Metro organization is "starting from scratch," administrative procedures are being developed with considerable caution and in consultation with competent management and fiscal advisors. Fortunately, most community leaders are acutely aware of the important bearing this agency will have on the future growth and development of the area and the municipality profited immeasurably from the excellent counsel which has been so readily available as a result of this genuine interest on the part of so many who "want Metro to work."



Water pollution was a general topic of conversation.

History

Adoption of this Metro organization required a majority vote both in the central city, and in the area outside the largest city. The first campaign for Metro in the Seattle area, from January to March 11, 1958, called for the handling of three functions: sewage disposal, transportation, and comprehensive planning. Although Seattle voters favored the program, it failed to get sufficient support in the suburban area. However, the campaign did have some educational value.

Within a month after the defeat, mayors of cities and towns around Lake Washington, Sewer District Commissioners, and interested citizen groups met to discuss the possibility of a revised program. People were wary of "supergovernment" and many could not visualize the over-all need of area-wide planning.

This time the function was limited to one program only—that of sewage disposal—and the area included was smaller. A very dry summer helped the campaign, for the water level in Lake Washington dropped several feet and pollution of the water was a general topic of conversation.

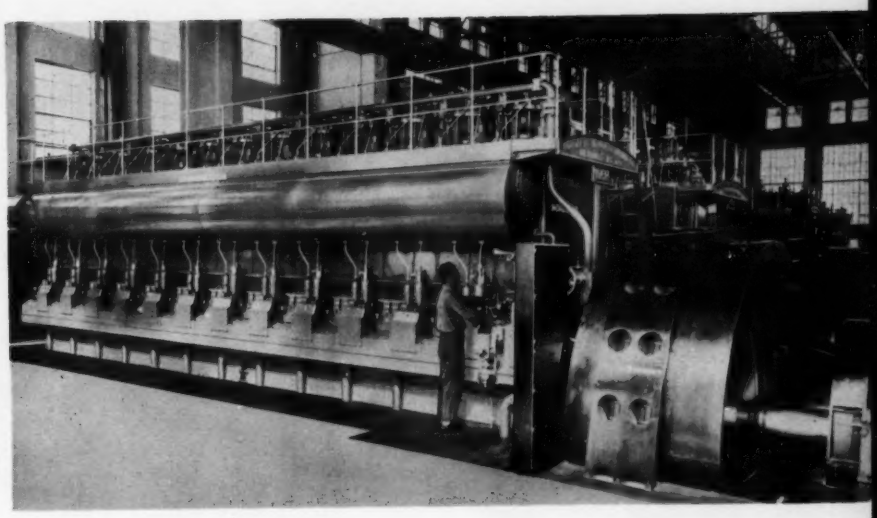
The second campaign was entirely different from the earlier one. There was less emphasis on the Metro concept—only "Clean Up Our Beaches." This need the public could readily understand and recognize, and as a result the second proposal received approval by the voters of both Seattle and the outlying areas involved.

Powers

The state enabling legislation gives the corporation the following powers: (1) to prepare a comprehensive sewer and drainage plan for the metropolitan area; (2) to acquire and construct the necessary facilities (it should be noted here that the consent of the owner must be obtained when acquiring or using existing facilities); (3) to require that any political subdivision in the area discharge its collected sewage into the metropolitan facility; (4) to fix rates and charges for the use of Metro wholesaling facilities; (5) to establish minimum construction standards, which means that municipalities and sewer districts must obtain approval of their plans for local facilities from Metro; and (6) to operate local facilities in areas presently unserved and where requested.

Metro is empowered to finance its functions by: (1) issuing revenue bonds; (2) issuing general obligation bonds after the proposition has been approved by 60% majority, and the total number of votes is more than 40% of those who voted at the last general election; (3) borrowing money from any corporate city or county when authorized by a majority of metropolitan council members and mutually agreed upon by the legislative body of the city or county concerned; and (4) obtaining "supplemental income" from each component city and county based upon its proportionate share of the total assessed valuation of Metro that is within its boundaries.

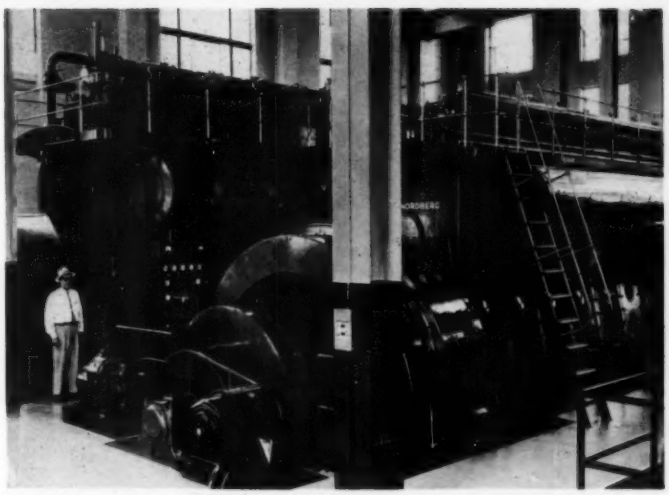
It is too early to pass judgment on Metro at this time, but we feel it is a sound, workable way of solving many of the municipal problems that know no political boundaries. Judging from the start already made plus the tentative schedule of activities adopted, we should see beneficial results in just a few years.



Here are eight of the nine diesels in the Ponca City plant with service records ranging up to 35 years.

World's Largest Dual-Fuel Engine

. . . sees service in Ponca City, Okla. municipal electric plant



Superintendent of Utilities, Pat Schlesinger, at the control panel of the 8,500-hp diesel dual-fuel engine, the world's largest.

The world's largest dual-fuel diesel engine is one of the nine power producers in the Ponca City, Okla. municipal electric plant. This 8,500-hp Nordberg Duafuel unit and the other eight Nordbergs produced a total of 55,826,003 kw-hrs in the fiscal year ended June 30, 1958 at a total production cost of just 5.67 mills per kw-hr. Net profit for the year was $920,582.52.

The big engine was put into service on March 26, 1956 and the added capacity came none too soon for the plant was called on to carry 15,000 kw that summer. With the new unit, the plant has a total installed horsepower of 29,910 and a net capacity of 20,920 kw.

On the basis of both size and efficiency, the big engine became the base generating unit of the plant and can be run to advantage whenever load in the plant exceeds 3,000 kw. This is particularly true because the new unit shows virtually the same high efficiency all the way from half load to full load. Since there are periods when even the late night load is over 3,000 kw, the big engine has been run as long as 60 days without halt.

By the end of 1958, the big prime mover had run 12,043 hours and produced 47,585,100 kw-hrs. Fuel consumption for the entire period was 51,694,000 cu. ft. of natural gas and 41,229 gal. of pilot oil, an average of 9.76 cu. ft. of gas and .0072 gal. of oil per kw-hr. Actually, gas consumption is believed to be lower. There is only a single meter measuring consumption for the entire plant and it has been observed that averages run between 9.2 and 9.3 cu. ft. per kw-hr. when the engine is operating alone. Lubricating-oil consumption was very low. In 36 months, the engine ran a total of 13,334 hours and used 12,402 gal. of lube, an average of 9,131 hp per gal. No oil was added to the crankcase through 1957 and 1958. In 1959, to restore the crankcase oil to its original viscosity, 200 gallons of oil were removed and an equal amount of new oil added.

In the fiscal year ended June 30, 1958, the nine Nordbergs generated 55,826,003 kw-hrs, at a total produc-

(Continued on page 150)

Vacuum leaf collector and tractor have reduced full-time leaf collection force to two men. The machine picks up wet and dry leaves but wet material slows up operation.

Leaf Collector—Experimentation

Meadville, Pa. discontinues hand operation, adds leaf collector, allows pavement burning, sets aside storage street—and saves

By **ROBERT PERRY**
City Engineer
Meadville, Pa.

The City of Meadville, Pa., shares with other cities one of the most perplexing problems in street cleaning programs, and in 1955 city officials decided that it was time to streamline the collection of leaves that had sapped its working force every year at one of the most critical periods. The weeks from the first of October through the third week in November are busy ones, with the last period of the construction season drawing to a close and with a great deal of other work to be done.

Since that time, several programs have been tried, all planned around a Good Roads Champion Vacuum Leaf Collector, and the result has been a substantial reduction in its labor force and a much better clean-up job than had been previously possible.

During the first two years of experimentation, collected leaves were made available to home-owners for composting, and while the initial demand lasted, most of the supply was picked up by gardeners in the city for leaf mulch. But few realized how many leaves it takes to make up a hopper load of 14 cubic yards, and during the second year of operation, demands dribbled to a point where the bulk of the collected material was disposed of as fill, along with street sweepings, tree stumps and other trash. They are not burned at the fill site, nor has the city ever tried composting.

An area on a side street is set aside during heavy leaf weeks and leaves are stored there until picked up by front-end loader and trucks.

Cut Labor Costs 50%

The most effective program evolved during experimental periods has been to put two men on the leaf collector, one driving the International rubber-mounted Model 340 tractor, the other guiding the vacuum hose on the collector, and to double-shift the city's mechanical sweeper. An area of a side street is blocked off for dumping the sweeper and for storage until the material is later loaded into open-body trucks by a Hough front-end loader and carted to the fill site.

Meadville has never made any distinction between leaves falling on the street and those falling on private property. Any leaves raked to the curb are collected.

The city has never prohibited the burning of leaves. No damage to asphalt streets has been reported as a result of leaf burning, and the practice of curb burning has greatly reduced the amount of material handled. With reasonable care, the burning has been carried on in a safe manner and pavement inspection each spring fails to locate the areas where leaves were burned, let alone areas where damage has occurred.

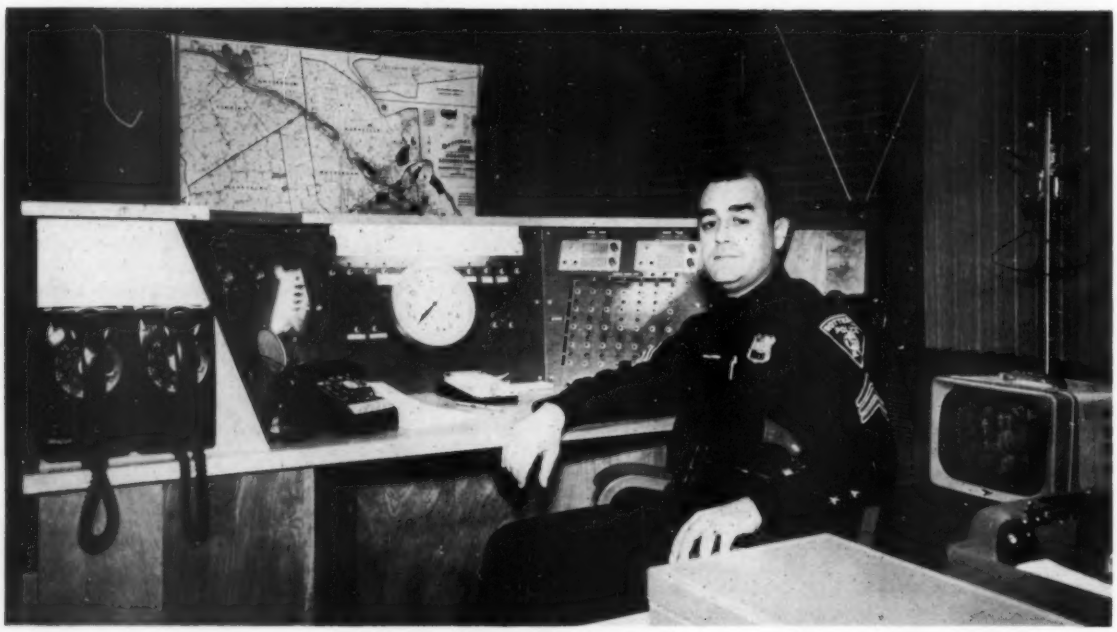
Costs

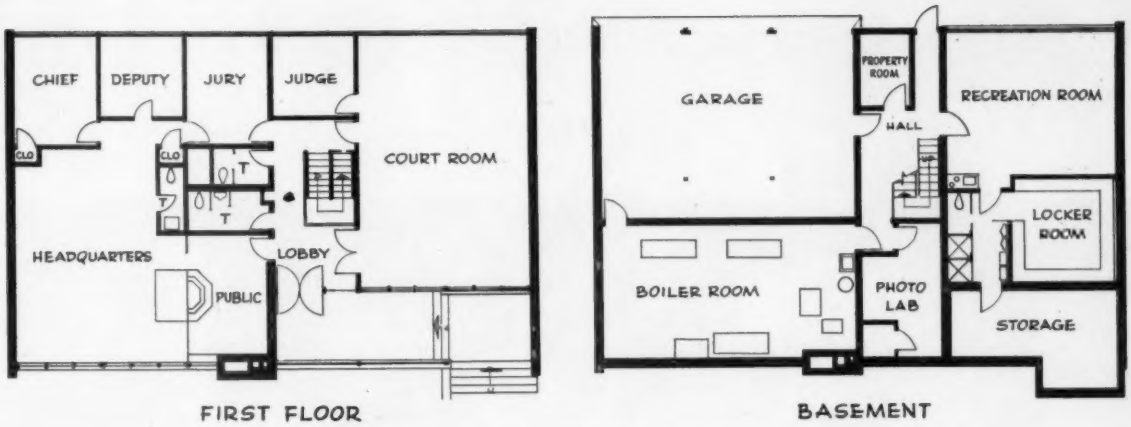
The cost of leaf collection in Meadville, including depreciation of equipment, is 20c per capita. Costs are in line with the average reported by 19 cities (including Meadville) whose leaf collection programs were surveyed by the American Public Works Association and reported in 1958. The APWA questionnaires, sent out to 31 medium-sized cities in 1957, established that 14 of the 19 cities reporting collect leaves on private property if they are raked to the curb or placed in containers. Also established was the fact 15 of the reporting cities prohibit the burning of leaves on asphalt pavements and that vacuum loaders were used in 10 of the 19 cities. The total cost of cleaning the 44 miles of paved streets in the city of Meadville was $18,000, not including ice and snow removal, or $1 per capita. Last year, the leaf collector picked up 87 loads during a 4½-week period.

Entrances are on different levels with front entrance a story higher than rear

Efficient Police Station

Elements that keep police at work—crime, vice, missing persons, petty complaints, and traffic control—call for adequate law enforcement headquarters and Rotterdam, N. Y. has one





Schematic view of first floor and basement

The new two-story, 68-by-42-foot police station of Rotterdam, N. Y. near Schenectady, is laid out as shown here. Veteran of 21 years of police work, 19 as head of the Rotterdam constabulary, Chief Leonard C. White says the new station offers these prime advantages — soundproof offices and courtroom comfort of the 21-man force which has increased morale and brought new effectiveness; adequate space for both men and equipment making all departmental operations more efficient.

Headquarters Room

The headquarters room illustrates this last advantage. Besides duty assignments, headquarters sergeants are responsible for maintaining the communications console, and processing complaints and case histories. The console, made by Hoe Corp., Poughkeepsie, N. Y., links the desk sergeant on duty with the department's four Plymouth patrol cars and one unmarked detective's car. Besides allowing the desk sergeant to assign cars to various patrol zones through the town, the console, which takes up half of the headquarters room area, lets him reach three town fire companies, contact disaster aid agencies, or monitor burglar and water pressure alarms.

A desk behind the console permits the desk sergeant to refer to index cards giving details on past accidents and arrests. These reports are filed on forms small enough to fit a Thermo-Fax photocopying machine and are kept in a file cabinet along the rear wall. To prevent loss, report files are cross-indexed according to category, officer, date, detective division copy, and name of complainant. Each of five copies of a complete report is a different color to designate its particular category. For instance, forms filed numerically according to the rank and badge number of the arresting officer are yellow; those filed alphabetically by complainant's surname are green.

Governed by a town board of four councilmen and a supervisor, Rotterdam is a first-class town with a population of 26,592, and a total tax assessment value of $45 million. It is 11 miles long and 3 miles wide at its widest point. Within these limits, police department patrol cars cover over 92 miles of town, county and state roads.

Although the department annually makes over 400 arrests and investigates 4,000 complaints or reports, traffic control remains its prime assignment. Four-fifths of the auto traffic to and from General Electric Company's Schenectady plants and offices, which employ a total of 32,000, file through Rotterdam every weekday. In addition, the town includes three large school districts. To police key school crossings, the department maintains 18 part-time officers.

Rather than remodel the Town Hall to accommodate the police force, the station was located behind it, where the town owned enough land to provide not only an adequate building but parking for 25 to 30 cars.

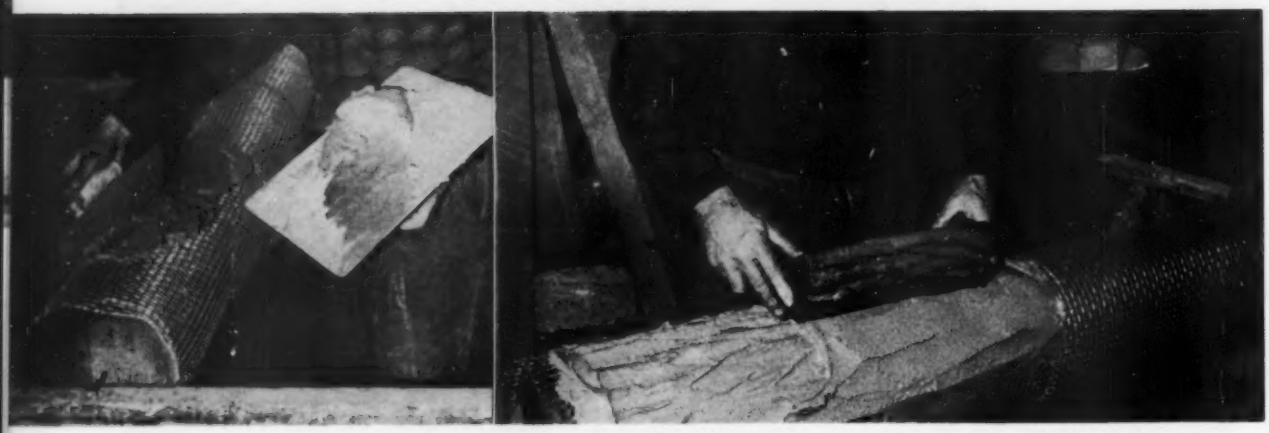
Besides fire and water system alarms made by Builders-Providence Div. of B-I-F Industries, Providence, R. I., and radio gear, the basement utility room contains heating, air conditioning and ventilating equipment. Hot water, circulating through perimeter fin radiators from a two-pipe reverse return flow system, heats the building. Each room has a thermostat to control its heat level. During cold weather, an outdoor control raises the system's water temperatures to match any drops in outdoor temperature. Forced flow convertors warm the building garage and public entrance-way.

Air Conditioning

The air conditioning units are water-cooled, package type, located in the basement utility room. Ventilation exhausts remove air from the shower and locker areas, taking it out of the basement through ducts to a separate flue in the chimney. The chimney also contains individual flues for the heating and air conditioning systems.

Authorized by permissive referendum and public hearings, the station cost $20.15 per square foot to build; total cost, including construction, site development, and equipment, was $133,000 — an amount being financed by a bond issue. Sargent-Webster-Crenshaw & Folley, Schenectady, were architects for the project, with Sarkis M. Arkell as partner in charge.

←
This is the console in the headquarters room where the desk sergeant accepts civilian telephone calls, asks for mutual aid fire assistance, and speaks via intercom to an officer in the station or in the patrol cars. The monitor lights at the panel's left are water pressure alarms which denote drastic changes in the pressure of the town's water system.



The locust core is coated with cement plaster . . .the bark block transforms the plaster into a simulated bark pattern . . .

Park personnel develop signs with the look of rustic posts, the feel of rustic posts but they are . . .

Hack-Proof, Weather-Proof,

By **JARVIS E. BADGLEY**, Superintendent
Construction and Maintenance Department
Union County Park Commission, N. J.

Replacement of vandal-, weather- and animal-vulnerable signs with those that are practically indestructible is the wish of many a city, county and state official. And with miles of winding wooded drives, isolated directional signs and hundreds of forest acres in its Watchung Reservation to maintain and patrol, officials of the Union County Park Commission in New Jersey were as plagued by collectors, carelessness and vandalism as any.

For many years, hundreds of man-hours and thousands of dollars each year were lost retrieving, repairing and replacing signs, sign posts, and guide rails that were traditionally rustic and just as traditionally limited to a relatively short life—even with weather, insect and animal damage the only worry. Malicious destruction could —and often did—occur a day or a week after their installation.

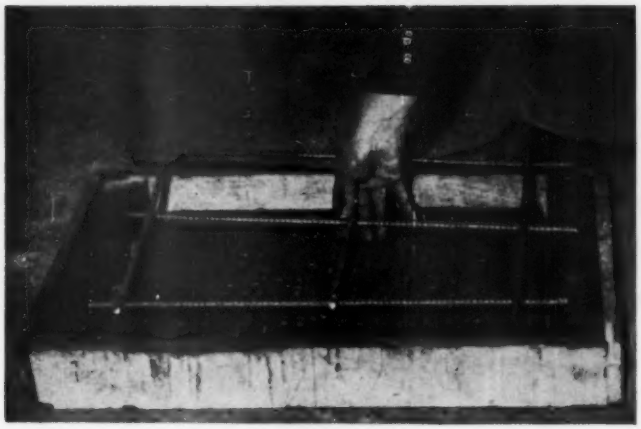
Over a period of years, rustic timber signs and guard rails have been replaced by permanent ones, but the only persons likely to be aware of it are those who have tried to damage or remove them.

Shop Developed

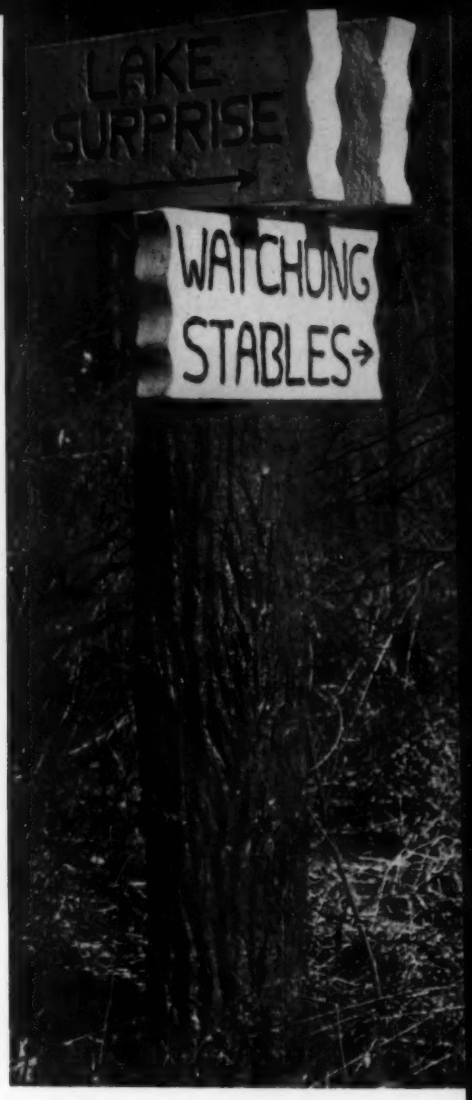
Largely as the result of ideas worked out by carpenter foreman E. J. McCarthy (now retired), commission forces have been fabricating these park fixtures in their own shops.

They start with a locust post 5 to 7 inches in diameter and staple ½-inch galvanized wiremesh to the locust core. A coat of 1 : 2 cement plaster with lime added is then troweled to the entire surface of the post.

A slab of unpeeled timber 15 inches long, 9 inches wide and about 3 inches thick, cut from a tree 16 to 18 inches in diameter is then rolled over the entire surface of the plaster coated post, until the post takes on the appearance of a coarse-barked, unpeeled log. When the plaster has set, the surface is painted with a flat brown paint to simulate an actual tree trunk segment. Depending upon the number of sign panels to be attached to the standard, upper faces of the post are



. . . rod panel reinforces cast concrete signs.



Result: *as rustic as its setting; as impervious to attack as rock—that is the record of the cement clad directional sign posts.*

Kid-Proof Signs

cut out to provide flat surfaces, which are then drilled to receive the panels.

The sign panels themselves are cast over reinforcing rod frames, with letters in rope, blocks, half-round molding or any other appropriate material nailed in mirror image to the inside of the panel form. These panels are later painted white or light yellow, with impressed letters in dark brown. They are bolted to the cement surfaced posts and the bolt heads are plugged with plaster. The signs have an overall height of about eight feet. The combination of the weight of the fabricated post and the depth of post hole very effectively discourage their removal by unauthorized people.

The bark-like surface of the posts may invite hatchet work, but damage to the axe or hatchet will far outweigh the slight chip or defacement of the paint on the post. Relatively few such nicks have been found during the infrequent inspection and maintenance tours now necessary for upkeep of signs.

Guard Rails

Prior to the park's "Build It Permanently" campaign, park drives were protected by rough-hewn oak or chestnut guard rails on locust or cedar posts. They were picturesque and in keeping with the native countryside but they lasted only about ten years under ideal conditions.

Forms for molding the concrete counterparts of the timber guard rails are made with rough, upland lumber to give the concrete a wood grain effect. The cast guard rails are removed from the forms before they have reached a hard set and they are marked with an axe or an adze to resemble the rough-hewn members. They are then painted with a brown paint and the finished product has the appearance of treated wood.

These guard rails are cast 6 inches square and 10 feet long, with sockets that fit over 2-inch x 2-inch lugs on supporting posts. The posts are cast 8 inches square and 6 feet long with beveled edges, and are reinforced with ½-inch bars in each corner. They are covered with white cement wash to give them better visibility at night.

Among the other shop-developed equipment now in use by park forces are permanent bleachers, permanently-secured, very heavy timber picnic tables and benches, and permanent tee mats installed on the golf course maintained by the department.

A small community gets a bargain-priced health and sanitation program by using the facilities of . . .

A Good County Health Department

By **CHARLES R. WITMER**, Borough Secretary
Sellersville Borough, Bucks County, Pa.
and Member, Bucks County Planning Commission

If our experience is representative, the small community will be ahead and its health standard will be higher if it participates in a good county health program rather than running one of its own.

Sellersville is a small borough, with a population of less than 2500, situated in northwest Bucks County. Our community antedates the Revolutionary War.

Prior to the establishment of a Bucks County Health Department, we had a Board of Health consisting of five local citizens, each serving a five-year term with one term ending each year. This Board in turn selected a Health Officer and asked the Council's approval of its choice. The individual thus chosen had no special knowledge or training in health regulations or requirements but carried out the directives of the local Board, on which there was at least one local physician. On many occasions, problems arose which the Board passed to the Council, since no one could be sure what was a health action and what was a police action. Finally, in desperation, the Town Council suggested to the Board of Health that our local Chief of Police be made the Health Officer in the hope that he could better effect cooperation when ordering a correction to be made. All of us can readily understand the hesitancy with which these directives were carried out. In a small community everybody knows everybody and even the police hesitate to carry out unpopular orders. I believe that boroughs with populations of less than 12,000 are definitely not in a financial position to employ a properly trained health officer.

In 1955 a County Health System was put into effect and our boroughs had the opportunity to select one of three choices: 1st—To eliminate their local Board of Health; 2nd—To continue as they had been doing; 3rd—To modify their Board of Health program and work in conjunction with the county organization. Sellersville adopted the last plan. Recently we decided to go all the way and abolished our Board of Health. However, we retained the right to correct nuisances and any such other purely local problems which would be detrimental to the people of our borough.

The County Health Department has a well qualified staff specially trained in public health medicine and techniques. It consists of a physician medical director, public health nurses, sanitary engineers, sanitarians and auxiliary personnel.

County Health Department personnel are continuously engaged in carrying out programs to prevent serious diseases and to act quickly to prevent contagion if isolated cases do occur.

The Department functions according to laws enacted by the Pennsylvania Legislature. Our 5-member County Board of Health establishes the general policies of our County Health Department.

The average gross cost per year of the public health services we receive has been less than $1.40 per person per year, less than 5 packs of cigarettes, and even half of this is paid from funds provided by the State Health Department and only half comes from county taxes. I think it's the biggest bargain available in Bucks County. The actual cost per person for 1959 will not exceed 65c from county funds.

Further, our County Health program's 1959 budget, which is $424,800, includes a non-recurring $60,000 item for a county-wide water and sewerage disposal survey which is presently being undertaken by the engineering firm of Albright & Friel, Inc. of Philadelphia. This sanitary engineering firm will help us plan for our future industrial and domestic needs for sewage areas, and will help us evaluate potential water sources—ground storage as well as underground resources. No county can progress properly without this information.

I wish to comment on the question of "home rule." A borough does not surrender any really exercisable right under this county health setup. My study of the decisions taken by the committees in their deliberations in the legislature at the time of the enactment of this particular law, clearly indicate their desire was to decentralize from Harrisburg to the county level a satisfactory and workable health program. Previously, most health services were performed by the state. Our County Health Department now provides us with most of those services, so we have gained far more "home rule" at the county level than any borough or township gave over to our County Health Department.

In areas like Bucks County there are some water and sewage problems which are so geographically large that they even require interstate organization. The urgent need to deal with one such problem led to the formation of INCODEL (Interstate Commission on the Delaware River), an organization that works to conserve and protect the Delaware River watershed. The control of sewage and wastes in order to protect our present and future water supply, and the control and if possible the prevention of disease and epidemics are matters which are too vital to be dealt with on a narrow basis.

In the past 50 years the average life span has been increased by 25 years, largely through improved public health measures. It is reasonable to expect that with proper sanitation and health regulations, the life span will continue to increase. I only hope that public health services will take more interest in geriatrics and do more to help some of us "old ducks."

Bucks County is feeling the effects of the exploding metropolitan areas of Philadelphia and Trenton. It is necessary for us to have proper professional guidance on the county level to plan properly for residential, business and industrial growth if we are to have a happy, prosperous, and healthy county. And if we are to have a happy, prosperous and healthy population in Bucks County we must have a coordinated county-wide health program.

THIS D4 IS DOING MORE THAN BURYING REFUSE

1 It's reclaiming land with high potential value

2 It's providing a source of fill dirt

3 It's disposing of refuse

Melbourne, Florida, is the largest city in the Cape Canaveral Guided Missile Area and growing fast. But its welcome growth has also brought problems—including finding land for needed parks, providing fill dirt for road construction and refuse disposal.

The economical—in fact, highly profitable—answer to all three problems has been a well-planned sanitary landfill operation, using a dependable Cat D4 Tractor.

The city is currently dumping some 1,700 cu. yd. of refuse in a swampy area every week. The D4 spreads, compacts and covers it with a foot of earth daily. When completed, it will provide a park. Then, the landfill operation will be moved to another area where much-needed fill dirt for road construction is now being removed. Buried refuse will take the place of the dirt, reclaiming the land for profitable use.

City Manager Tejis Huguely tells why the city picked a D4 for this work: "We were using the county's D4 and were pleased with its performance. When it came time to buy our own tractor we decided the D4 was the right one."

Your Caterpillar Dealer has a complete line of earthmoving equipment for construction, maintenance and landfill operations. He will be happy to demonstrate the most suitable Caterpillar-built equipment for your city's needs. No obligation, of course. Get in touch with him today!

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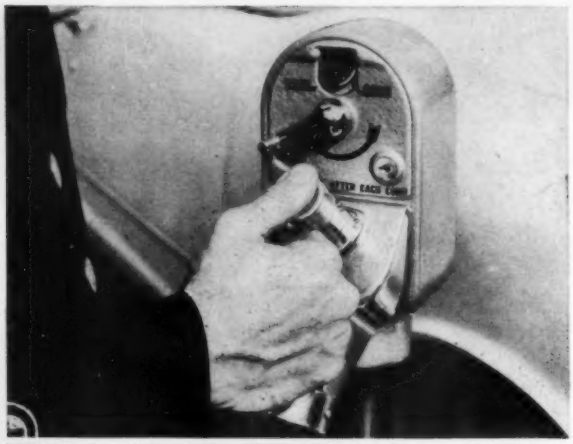

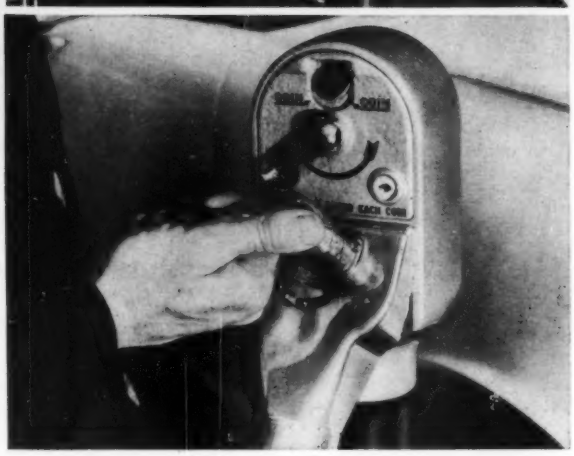

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Step #3 Turn handle—money falls safely into vault. Passage of coins is unexposed and 100% secure from meter to sealed collection vault. As "Speed Collector" is removed, coin receptacle is automatically resealed.

This is the fastest, safest, easiest method of collecting from parking meters ever designed. The system is adaptable for use with present "Mark-Time" meters. Complete details and demonstration available on request.

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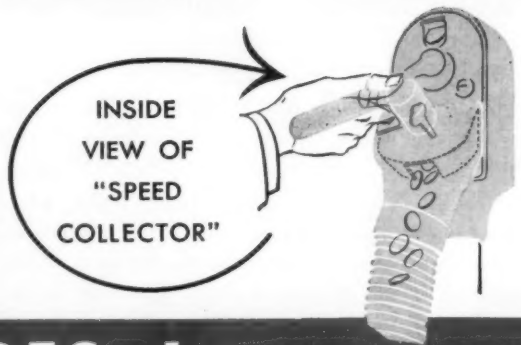

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Easton's Seven Years With Plastic Markings

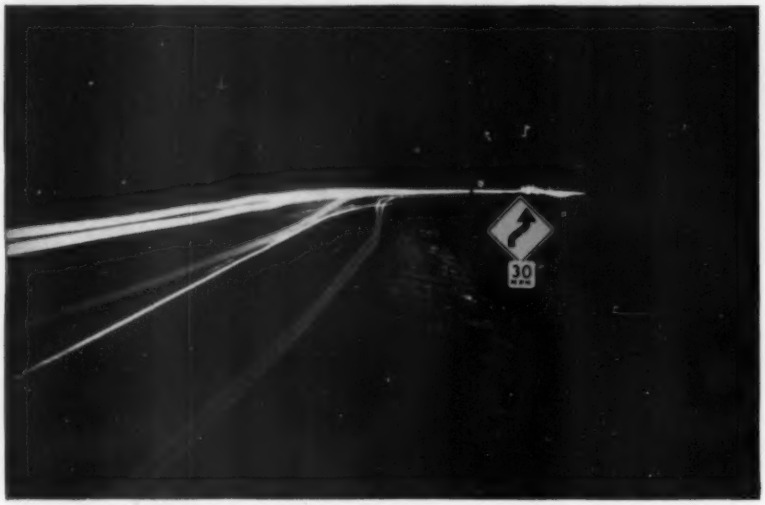
By **ALEX CRUICKSHANK**
Captain of Police, Easton, Pa.

The City of Easton, Pa., has had seven years of experience with plastic traffic markings. We have used Nefslabs (a product of J. W. Neff Laboratories, Inc., Stockertown, Pa.) since May of 1952. This initial installation required about 1200 lineal feet of plastic rectangles. Since then we have expanded our use of Nefslabs to include strips, arrows and letters.

The oldest installation, in the center square, has been subjected to a traffic load of approximately 450 cars per hour per lane, as well as the usual rough treatment of cinders and tire chains every winter. Though some of the plastic has been disrupted by street repairs, it is estimated that the effective life of the Nefslabs at this heaviest traffic area is approximately six years.

These pictures show the varied uses to which Nefslabs are put in Easton, Pa.

Why over 700 cities and counties get better signing at lower cost



With a vacuum applicator in your sign shop, you can make all types of professional traffic signs for roads and streets—reflective signs that guide motorists safely and surely day and night.

Fabrication of professional traffic signs with an automatic vacuum applicator is the method now in use by over seven hundred cities and counties to get better signing at lower cost.

The starting point for savings is refurbishing old signs right in your own shop. You can give your old signs new faces in a matter of minutes in an applicator...and actually, you can switch over to red stop signs for as little as $3.60 per sign.

For additional savings, look at those projects you have wanted to start but, perhaps, put off because you thought they might be too costly. Projects like new reflective street name signs, hazard markers—distinctive trailblazers and guide signs that direct motorists day and night for city parkways or county roads. Faces for these signs can be made to order for you at lower cost than you think. All you have to do is apply the face to your sign blank in your applicator. Takes only five minutes.

For instance, you can reflectorize street or road name signs in a 3′ x 4′ applicator that turns out 10 or more of these 6″ x 24″ signs every five minutes.

Or you can make 8″ x 36″ bridge end markers to reduce the danger of darkness with any bridge hazard in your area—for as little as $1.95 per marker face.

Important, too, is the fact that operating an applicator is so simple you don't need specially trained men to make reflective signs. Production is fast—so you won't need extra people in your sign shop even during the busy spring season. When maintenance crews are idled by weather conditions their time can be more fully utilized by sign making jobs in the shop.

Vacuum applicators are available in a variety of sizes—including this new, table top "Economist" model. Designed for small shops, it produces nine 24″ x 24″ reflectorized signs per hour at low cost.

Your 3M Representative can tell you more about how to get the most out of your vacuum applicator—to put more into your signing program. You can get complete information by writing: 3M Company, Dept. RKB-99, St. Paul 6, Minnesota.

Anyone can operate a vacuum applicator—no special training is needed. You can make signs any time you need them—and give your community better safety with better signing at low cost.

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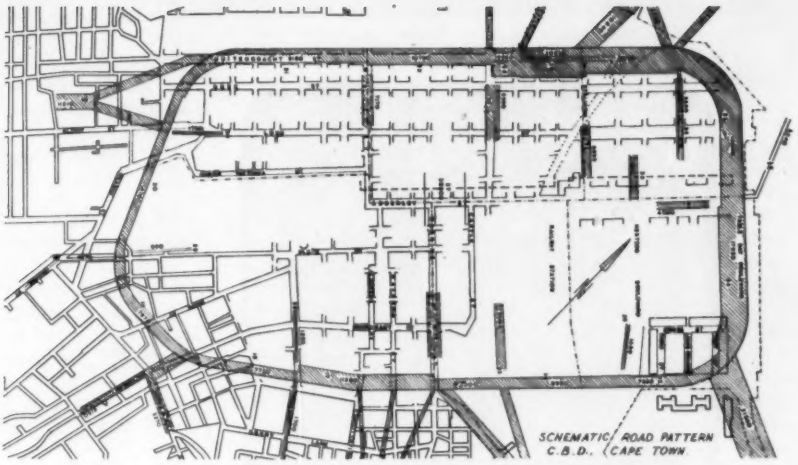


The map shows the inner ring road around Cape Town's central business district.

Traffic Engineering In Urban Development

To cater to the enormous flood of motor cars that now traverse urban streets and highways is the function primarily of the traffic engineer. New highway construction is today the central theme of municipal engineering not only in Southern Africa but in many other parts of the world, just as water supply and sanitation were in generations preceding ours.

Briefly the work of the traffic engineer comprises three principal categories.

The first, of course, is the planning and design of effective new highways—the most spectacular of his activities, the one which we in South Africa are fortunate today in being able to make our main task, and the one therefore that forms the principal theme of this article.

In old and developed cities, new works do not necessarily offer the most appropriate solution to the need for easier traffic flow and control; they might in certain circumstances be uneconomic or be undesirable because they would impair the specific character or the human values of the environment.

Consequently, the traffic engineer's second task is to make the best of what is available, using such techniques as traffic signals, roadway markings, channelization and one-way traffic routing. This work is important, not merely in relieving congestion but in lessening the toll of accidents; and scientific study of the cause of accidents, particularly at intersections, is an important prerequisite to design. Few South African towns or cities, however, have had the staff or manpower adequate to attack this phase of traffic engineering with the vigor and determination it undoubtedly requires.

The traffic engineer's third field lies in the general sphere of town planning. In the detailed layout of subdivisions the importance of traffic engineering will be particularly felt; the old rectangular gridiron system previously uniformly applied under all conditions will be replaced by thoroughfares designed according to their particular functions. Local streets will be differentiated from through streets and traffic-free pedestrian routes and precincts will create safe avenues for human movement.

Traffic studies show that large cities are frequently major generators of traffic; as the size of a city increases, the proportion of by-passable traffic decreases although there nearly always remains a fairly substantial volume of traffic that does not wish to enter the city itself.

Of the traffic that does enter the city the largest proportion is bound, not for suburban areas, but for the city core, the central business district.

Formerly, road planners were satisfied merely to connect national roads to outer ring roads circumscribing cities at about a five or ten mile radius. Recent traffic studies, however, have shown clearly that this is inadequate. To serve the motorists' needs effectively, traffic on national roads must be given the opportunity, not only of circumferentially bypassing the city, but also of being led right into its heart.

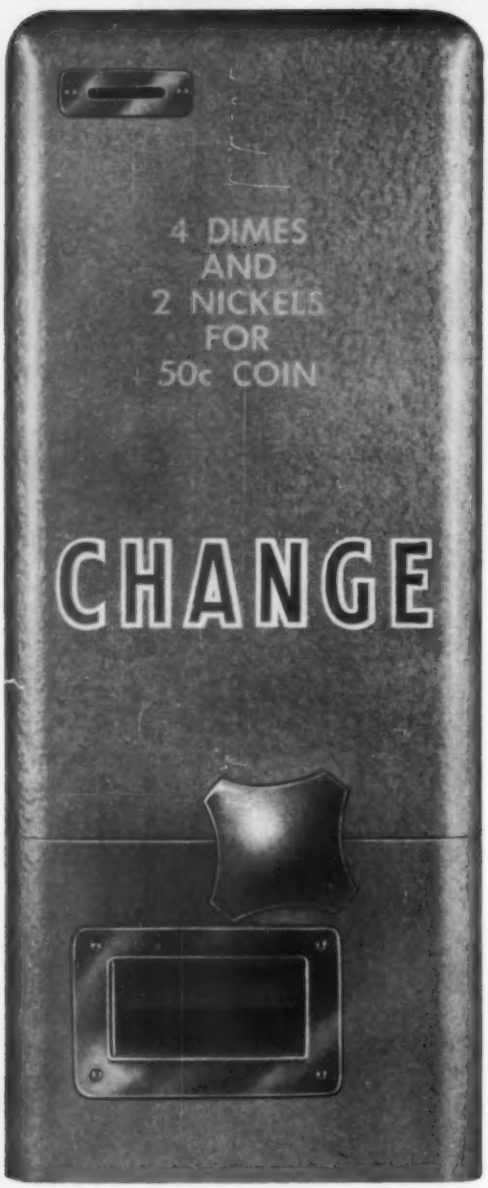
Central Business Area

It would be impracticable, however, to bring high capacity freeways carrying heavy additional volumes of traffic directly into an intensively developed and already congested business area without making special provision to link these to the existing street system.

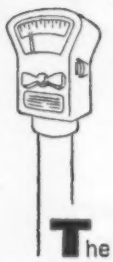
Freeway traffic must be provided with facilities adequate to allow motorists to proceed easily to any part of the central city; at the same time bypass of the congested center must be afforded for inter-suburban traffic.

There are two solutions to this problem: the first is the cross-town expressway, on a grade different from that of the city itself, so that local traffic can proceed unhindered. This is invariably a most expensive solution. The most expensive road in the world, costing tens of millions of pounds per mile length, is Boston's Elevated Central Artery.

The alternative solution, and one which is now universally accepted, is the provision for an inner



convenient coin changers please the people, help produce new revenue



The really modern off street parking facility . . . lot or garage . . . is equipped with parking meters and convenient coin changers for 24 hour, unattended operation. Lack of need for attendants cuts operating costs. The added convenience of the coin changers increases use of the facilities . . . adds to the revenue . . . and pleases the citizens. Models to fit every need. Manual or electric. Send for complete information, either direct or through this publication.

Write:

Standard Change-Makers, Inc.
422 E. New York St.
Indianapolis, Indiana

World's largest manufacturer of separate 5¢, 10¢, 25¢ and 50¢ coin changers. District offices in 17 major cities throughout the United States.

ring road circling the central business district as tightly as possible. In almost every major city there exists a belt of low-value, or even blighted property surrounding the central business district. Land acquisition costs in such areas can be reduced to reasonable proportions but, even more important, traffic is kept away from an already congested area.

Central Business Parking

Just as railway traffic must be provided with railway stations, so too must motor traffic have suitable terminal facilities.

In all cities, the parking problem has become acute. Normal curbside parking spaces have become grossly insufficient in the centers of most large cities; and everywhere, in spite of strenuous efforts by traffic police, the all-day parker tends to preempt the few spaces that are available; so that the short-term parker, that is, the shopper or the business visitor, finds nowhere to park.

Yet it is precisely the latter group which forms the clientele of the business district and provides its raison d'etre. Equity and common sense demand that the short-term parker receive preference.

This is the primary reason why highway authorities all recommend the installation of parking meters —a measure which makes enforcement of parking regulations relatively simple and which enables the short-term parker to gain the required preference over the long-term parker.

Installation of parking meters is, by itself, however, not enough. Additional parking spaces must be available by construction of off-street parking facilities.

To cater for the needs of long-term parkers, parking lots not necessarily right in the core of the city can prove adequate; for maximum effectiveness they may, and preferably should, be placed adjacent to the inner ring road so that traffic can be afforded easy access to and egress from the parking lots.

Complete exclusion of all motor traffic from the central city may well be compared with treating a headache by cutting off the patient's head! While the provision of purely pedestrian shopping precincts, arcades and even streets is in many cases desirable, even advantageous commercially, the total prohibition of cars from large commercial areas would serve neither the business interests involved nor the people who need to visit and use these business facilities.

S. S. Morris, *City Engineer*
Cape Town, South Africa

More Order On Arch Street in Philadelphia

In its efforts to combat increasing traffic volumes, the Department of Streets, Philadelphia, Pa., is availing itself of new methods and techniques. Arch Street, shown here, is a heavily travelled downtown artery loaded with cars, trucks and buses. Business suffered and properties deteriorated. Then the street was resurfaced and new mercury vapor lighting installed. Traffic was changed to a one-way movement except for morning hours, traffic lines were painted, and overhead lane signals were installed to channel the reversible traffic flow.

As a result, traffic has been flowing more freely and business has had a decided pick up. The all-aluminum, tapered traffic signal supports were supplied by Pfaff & Kendall of Newark, N. J.

Charles E. McMenamih
Department of Streets
Philadelphia, Pa.

Overhead lane signs channel the reversible traffic flow on Philadelphia's Arch Street. Traffic now flows more freely.

With CATATHERM REFLECTIVE PLASTIC STRIPING you can STRIPE IT... AND FORGET IT

How often have you embarked on an ambitious striping program that goes something like this:

Plans are made . . . work crews assigned . . . and striping begins. The first job looks great . . . you're pleased and move on to the next spot . . . and the next . . . and the next. Work progresses on schedule and then . . . you revisit the initial starting point to find your beautiful striping job is no more. The traffic paint has almost disappeared. Already, it demands restriping . . . and your crews are tied up elsewhere.

There is a simple way to avoid this frustrating situation. Use Catatherm Reflective Plastic Striping. Composed of specially formulated plastic resins, pigment and over 55% reflective traffic beads, Catatherm is hot extruded directly and securely onto any pavement . . . is available in white and yellow.

If you're interested in pavement markings that will outlast good quality paint stripes from 9 to 26 times . . . Catatherm is for you. Let us tell you more about Catatherm . . . how you can really "STRIPE IT . . . AND FORGET IT". Write today.

Cataphote CORPORATION

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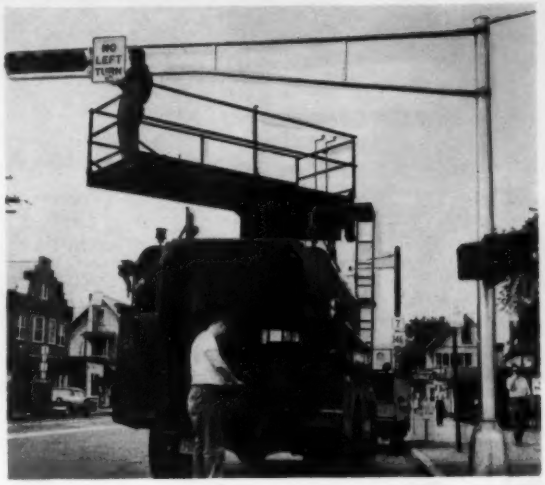
Manufacturers of CATAPHOTE REFLECTIVE BEADS • CATAFLEX REFLECTIVE COATING • CATALINE REFLECTIVE STRIPING
CATATHERM REFLECTIVE PLASTIC STRIPING • TRAFFIC SIGNS • STREET NAME SIGNS

Signal Maintenance in Schenectady

These men are servicing a 4-section Crouse-Hinds signal head with New York State directional arrow indication. Pole and trombone arm are Pfaff & Kendall aluminum. Schenectady is now carrying out a program to replace all double arrow lenses with a separate lens indication for each direction.

The truck is a 1957 International chassis with a Powers body and power lift. The truck is also used for sign erection, tree trimming, picture taking, fire alarm service, and signal painting and maintenance.

The city currently has 101 signalized intersections. Six more are being added in an 18-acre redevelopment area adjacent to the central business district. This area has been cleared, and is now awaiting final development, while temporarily serving to alleviate the downtown parking problem.



A Crouse-Hinds traffic signal gets service from a Powers Body Lift.

Meter Maids for Columbia, S. C.

Applications for positions as meter maids to check downtown parking meters and perform public relations duties were recently received at the Police Department Traffic Division of Columbia, S. C.

Qualifications for the eight openings as patrolwomen are a high school diploma, with some college education preferred, pleasant personality and experience in dealing with the public.

Applicants must be between 24 and 34 years old, married, between 5'4" and 6-feet tall, and in excellent physical condition.

Patrolwomen selected will undergo intensive training in traffic laws, local history and public relations.

On their beats, the meter maids will wear uniforms similar to WAVES' uniforms with identifying badges, and will carry change for the convenience of drivers using parking meters. They will also carry guidebooks to aid visitors and newcomers. The patrolwomen will work a 40-hour, five-day week 9 a.m. to 6 p.m. when parking meters are in effect, with an hour off for lunch.

Starting salary for the meter maids is $200 a month. Summer and winter uniforms, shoes, pocketbook, raingear, and badges are furnished.

The Spelling Wasn't Intentional

The spelling of the word "curve", as shown in the photograph, was not intentional but an error by our Street Maintenance Department. Most of the captions used with the photograph, that I have seen, implied that the mis-spelling was intentional. This was not so and the error was corrected within a few hours.

A street department employee merely placed the wrong stencil on the pavement without noticing his error. Although the error has drawn a great deal of publicity, we would not recommend it as a traffic control device.

E. R. Asmus
Chief Administrative Officer
Baldwin Park, Calif.

This pavement marking slowed down the motorists on Olive Street in Baldwin Park, Calif.

In dry weather or in wet, the 1,000-watt color-improved lamps provide high visibility.

Big Mercury Lamps In Yonkers

By **JAMES F. DELEHANTY**
Inspector of Light, Power & Signs
Department of Public Works
City of Yonkers, N. Y.

The City of Yonkers, N. Y. has modernized its downtown street lighting by installing new mercury lamps. These lamps are installed on new Pfaff & Kendall aluminum poles which had to be erected at exactly the same locations as the obselete steel poles which were being replaced. This was necessary in order to prevent the destruction of the recently completed street pavements which would have resulted if new underground conduits were constructed at different locations. Under these conditions only five old poles could be dismantled at one time because of the necessity of maintaining some illumination on the streets at all times.

The first group of 60,000-lumen mercury lamps was placed in service on November 1, 1957. In a little lights-on ceremony conducted in Getty Square the "switch" was pulled by Mayor Kristen Kristensen and City Manager Charles L. Curran.

City Manager Charles L. Curran (left) and Mayor Kristen Kristensen turn on the mercury vapor lamps.

Getty Square, the heart of Yonkers, is the focal point of the program designed to boost after dark business volume. The 168 General Electric luminaires have helped change the city's prime business district from a small town atmosphere with mediocre illumination to one of the best lighted shopping areas in the country. This has stimulated night-time shopping and has had a salutary effect on the general public by showing that the city is progressive and cognizant of the needs of the community.

Twenty-six color improved mercury vapor lamps of the 60,000-lumen size are installed in the Getty Square area and these produce an average street illumination of five foot-candles. The old incandescent lighting gave one-half foot candle. On the adjacent streets, the city installed 80 mercury lamps of the 40,000-lumen size and 62 mercury lamps of 23,000 lumens each. These adjacent streets now have 1.62 to 3.38 foot-candles illumination as determined by the requirements of each street. All lamps are mounted 30 feet above the street.

The total cost of the project to the city for purchasing and installing the 168 luminaires, aluminum poles, concrete foundations, etc., was $128,000.

This meter stops revenue-robbers

Rockwell-built Dual single automatic meters are the only automatic meters with entire mechanism enclosed and protected by rugged inner case.

Many parking meters can be tripped or jammed easily with a wide range of objects . . . every time this happens it means lost revenue and mounting repair costs for some community. This can't happen to Rockwell-built Dual Parking meters because the rugged stainless steel coin passage is closed as the clock is engaged, making it impossible to get at the timing mechanism with popsicle sticks, paper clips or other objects. This *proven* tamper-proof design is just one more example of the built-in quality that pays profitable dividends year after year to communities using Rockwell-built Dual Parking meters.

Whatever your parking meter needs, there are Rockwell M-1 Manuals, Dubl-Duals and Automatics to help solve your metered traffic control problems. Why not have a Rockwell parking meter specialist call on you soon? He represents 25 years of experience in the profitable solution of parking meter problems. Dual Parking Meter Company, Subsidiary of Rockwell Manufacturing Company, Pittsburgh 8, Pa.

DUAL PARKING METERS
another fine product by
ROCKWELL

SEND COUPON FOR FREE DETAILS

Rockwell Manufacturing Company
Pittsburgh 8, Pa.

☐ Please send details on the Dual Parking Meter line.

☐ Please have a Rockwell field engineer call.

Name:_____ Title:_____

Address:_____

City:_____ Zone:____ State:_____

Twice As Safe

Nearly as bright as day.

Modern street lighting as a deterrent to crime and traffic accidents is shown graphically in statistics recently published by West Covina in Southern California. The lighted areas had exactly half the traffic accident increase of the unlighted areas.

The study points to similar statistics concerning the commission of crimes, noting that the increase in lighted areas is much below unlighted districts.

An eastern suburb of Los Angeles, West Covina's link by freeway with its giant-sized neighbor has pushed the population from 4,500 in 1950 to more than 40,000 today.

West Covina, incorporated in 1923, offers a startling statistical comparison between older sections of the city which do not have good street lighting and the newer sections which do. The new lighting installed by the Southern California Edison Co. is practical and attractive. All of the business district is lighted with 20,000-lumen Line Material mercury vapor units on bronze-green fluted steel electroliers manufactured by the Union Metal Manufacturing Co. More than half of the residential area is lighted with 2,500-lumen incandescent lamps. Since the city will contract with Edison for the fluted steel electroliers at a nominal cost differential between the steel electroliers and wood poles, the trend is for steel standards to be used throughout the city.

The preface to the study compiled by West Covina's police department says: "The purpose of this report is to acquaint this department and other interested persons with the crime problem presenting itself by improper lighting facilities in many areas of our city."

Statistics were compiled over a period of 19 months. Areas were compared on a basis of similarity, that is, those with basic components of the community such as schools and churches exerting approximately the same geographic influence on both new and old areas under study. Commercial areas were not compared because all of West Covina's shopping centers are new and offered no basis for comparison.

The study also indicates the wisdom of West Covina officials who enacted a street lighting ordinance in 1952, in the early stages of the city's booming growth. This law makes it mandatory for subdividers to provide steel electrolier street lighting installations in their new subdivisions. New business houses also are required to take part in the lighting of their adjacent commercial area.

This enactment was workable but it met with opposition. Residents felt they had moved to the "country" and didn't want it disturbed with "glaring" street lights. City officials note today, however, that these same critics praise the lights for their many benefits now that the "country" has become a city.

Subdividers also have discovered the value of these lights during the construction of a new development. The Southern California Edison Co. is energizing street lights before the new homeowners move in. Developers report a substantial drop in vandalism such as broken windows and mud splattered buildings within unoccupied tracts.

Last year, the city received a Traffic Safety Award, one of 108 cities to be so honored by the International Association of Chiefs of Police.

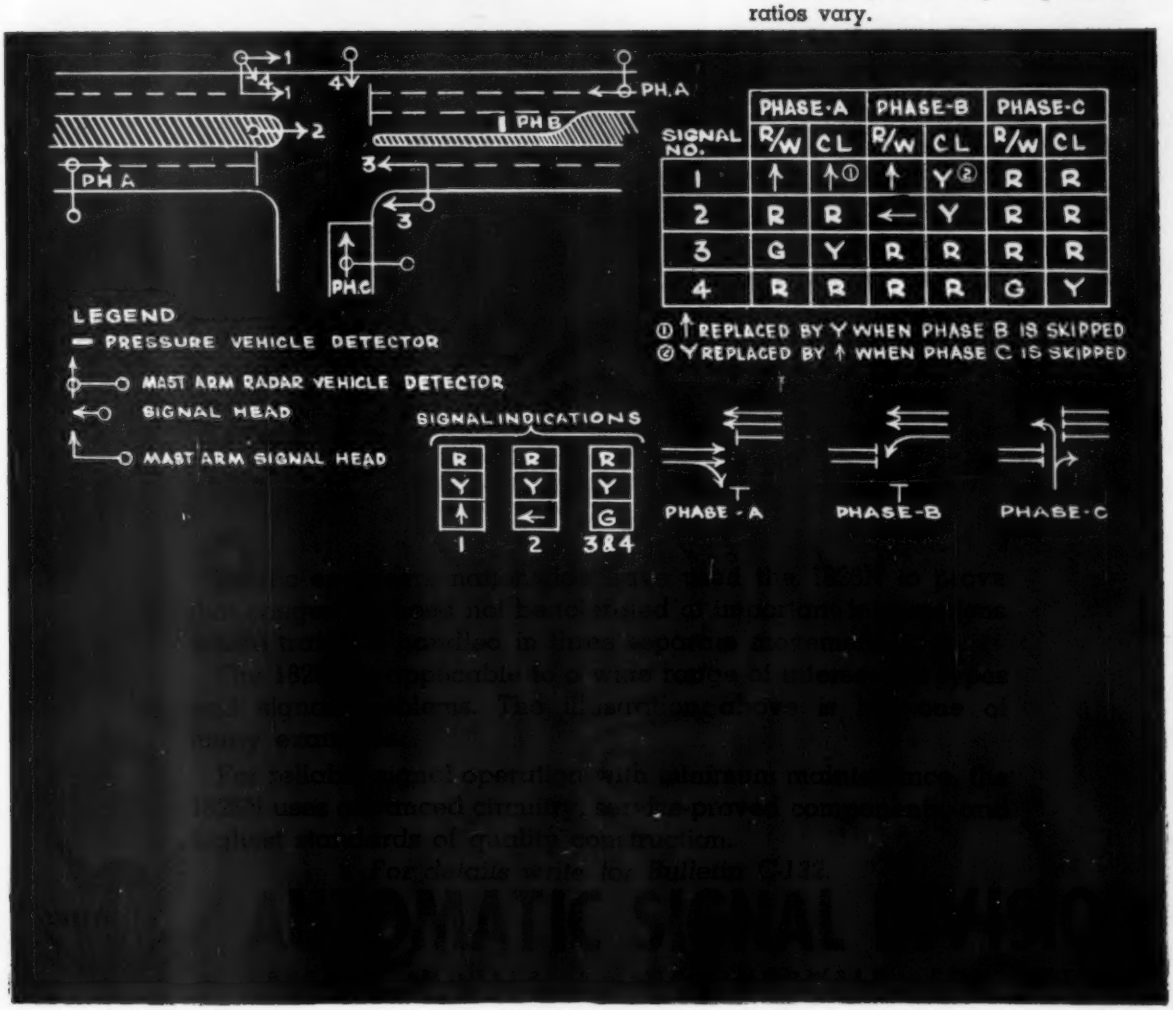
West Covina's Chief of Police Allen Sill shows the city's mayor, Vernon Mottinger. the significant difference between the accident and crime records of poorly lighted districts and those of well lighted districts.

1826N SELECTIVE TRAFFIC SIGNAL OPERATION

Selective Signal Operation is traffic signal control that adjusts to moment-to-moment needs of the traffic itself rather than following a rigid, pre-set pattern of phase rotation and timing.

Model 1826N is a three-phase, full actuated signal controller. It provides selective signal operation by:

- giving green light only to intersection approaches that need it — skipping those momentarily clear of traffic.
- continuously dividing green light time according to the ratios of conflicting traffic flows — regardless of how widely and frequently those ratios vary.



SIGNAL NO.	PHASE-A R/W	PHASE-A CL	PHASE-B R/W	PHASE-B CL	PHASE-C R/W	PHASE-C CL
1	↑	↑①	↑	Y②	R	R
2	R	R	←	Y	R	R
3	G	Y	R	R	R	R
4	R	R	R	R	G	Y

① ↑ REPLACED BY Y WHEN PHASE B IS SKIPPED
② Y REPLACED BY ↑ WHEN PHASE C IS SKIPPED

Front Street in Traverse City, Mich. after and before relighting.

Citizens and City Share Cost In Traverse City

Taken under identical conditions but three months apart in time, these night scenes of Front Street in Traverse City, Mich., show the improvement along a 1½-mile thoroughfare after a 30-year-old incandescent system was replaced by Westinghouse OV-35 luminaires and 21,000-lumen BH-17 mercury vapor lamps.

The new system eliminated the earlier "lighted-tunnel" effect. Good design has provided proper light balance between sidewalk and street surfaces.

A relighted Front Street is the joint achievement of the City Commission and the Chamber of Commerce. The need for relighting and a plan for carrying it out were first broached by City Manager N. G. Demoose to the Chamber of Commerce. The Chamber endorsed the plan and arranged for the proposal to be carried to the public and to property owners by a special street-lighting committee. Both groups responded with formal petitions that the relighting program be undertaken. Property owners undertook to pay 70% of the cost of the $55,000 installation. The city underwrote the remaining 30%.

After final approval of the program by Traverse City's City Commission, the City Light and Power Department began installation of the equipment. Just over three months later, the full complement of 188 luminaires was mounted on 30-foot Kerrigan Weldforged standards and wiring was complete. Since the turn-on ceremonies, the community has approved the new system and Traverse City officials are now investigating extension of mercury vapor lighting into residential areas and to other major roads, such as the two miles of Bay Shore Boulevard which has already been beautified and landscaped.

Fluorescents for Ohio Housing Development

A total of 93 General Electric fluorescent luminaires have been installed on the streets of Huber Management Corporation's 750-unit development of duplex apartments in Kettering, Ohio. Photoelectric controls provide dusk-to-dawn operation.

According to J. R. Cashen, vice president of the Huber Management Corporation: "These units put the light right on the pavement where it belongs, and all of our tenants are pleased."

GO MODERN

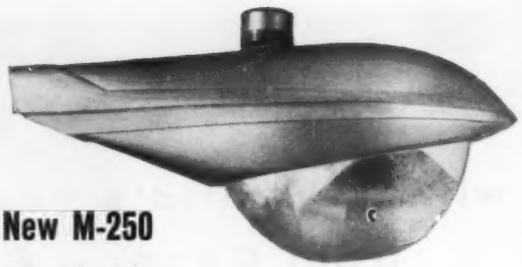
with the world's newest mercury luminaires
from General Electric

New beauty, efficiency, safety
for every street and highway

GENERAL ELECTRIC

GO MODERN

with General Electric's new mercury luminaires

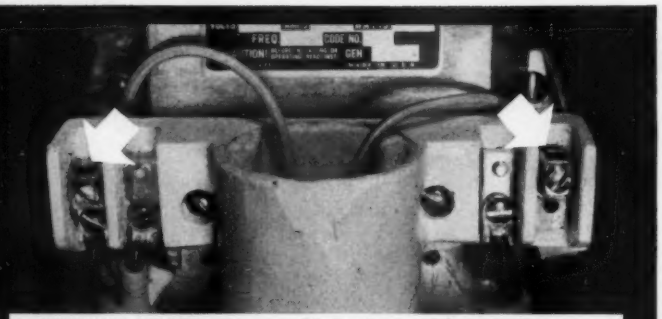


New M-250

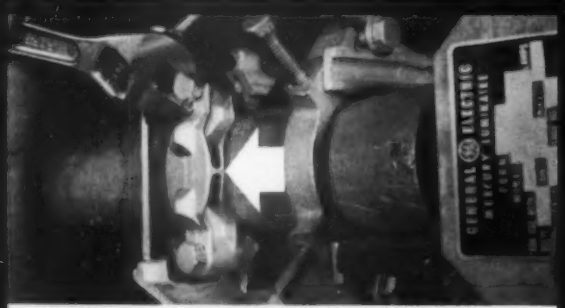
175 and 250 watt
residential and light-traffic streets

Get top efficiency, new modern

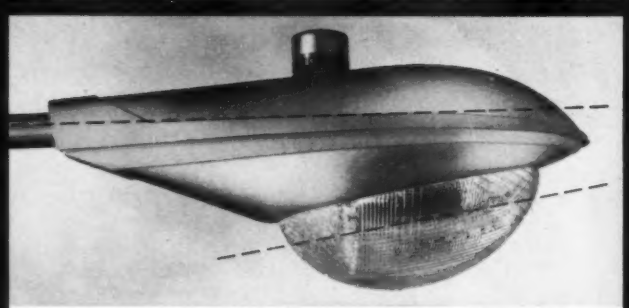
POWER PACK built-in ballast saves $50-75 per unit during installation—175- to 1000-watt sizes.



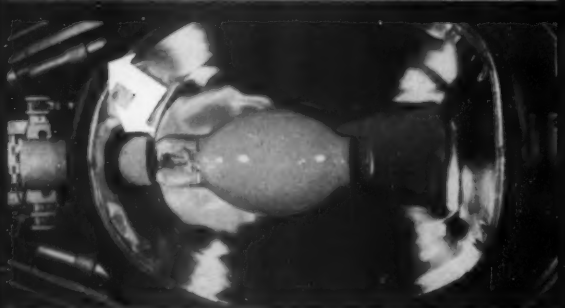
TERMINAL BOARD allows quick hook-up with two clamp-type screws; eliminates splicing, other interconnections.



UNIVERSAL SLIPFITTER easily adjusts for 1¼- or 2-inch brackets. Requires no additional parts.

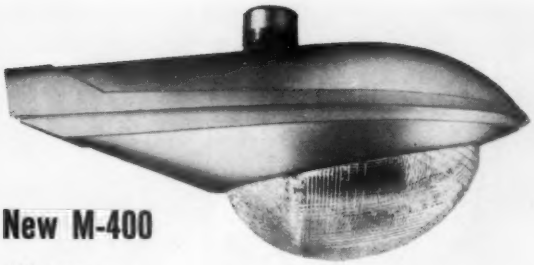


TILTED OPTICAL ASSEMBLY directs light where it is needed, contributes to graceful styling.



SEALED OPTICAL ASSEMBLY—silicone rubber gaskets block entry of bugs and dust, reduce cleaning.

UNIT PHOTOELECTRIC CONTROL with dependable new G-E cadmium sulphide cell locks on top of unit.



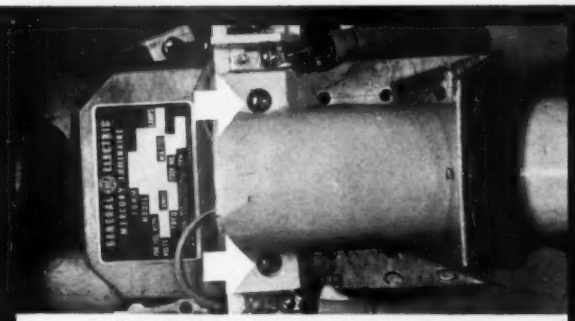
New M-400

400 watt
business and traffic streets, highways

New M-1000

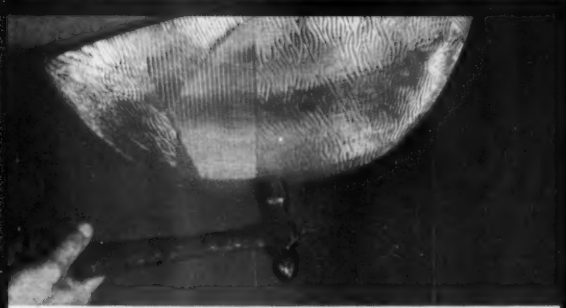
700 and 1000 watt
whiteways and shopping centers

styling, plus these extra values



MULTI-POSITION SOCKET—IES distribution types are easily selected by simple screw adjustment.

LAMP FLEXIBILITY—complete lamp selection—clear, white, color improved, 175 to 1000 watts.



ACRYLIC REFRACTOR on M-250 unit, heat-resistant glass refractors on other units, cut breakage.

Smart styling . . . unequalled efficiency . . . economical operation . . . all are yours with new General Electric mercury luminaires. And, for the first time you'll find ratings for every street and highway *in a single design family.* 100% designed by General Electric — with components engineered to work together—this new mercury line delivers these major user benefits:

Unparalleled photometric performance – Precisely contoured reflector and proven prism design give optimum light output and control.

Unequalled electrical efficiency – Built-in "Power Pack" ballast, first introduced by G.E., provides lowest "watts loss" in the industry; available in all ratings.

Wide flexibility—IES distribution types may be selected by simple movement of adjustable socket. Mount on either 1¼- or 2-inch bracket with universal slipfitter.

Low installation and maintenance costs—Easy access to all components, convenient two-connection pre-wired terminal board for wiring, unitized construction make installation simple. Long-life ballast, positive gasketing, heat-resistant glassware minimize maintenance.

Get full information from your General Electric Apparatus Sales Engineer or Agent today or use the coupon below.

Progress Is Our Most Important Product

GENERAL ELECTRIC

Section G450-5, General Electric Co., Schenectady 5, N. Y.

Please send me free bulletins on the subjects checked below:

☐ New Mercury Luminaires, GEA-6943

☐ Cadmium Sulphide Photoelectric Control, GEA-6987

Name_____

Company_____

Street_____

City_____ State_____

Reliable—after years of tests

New G-E cadmium-sulphide control installs in seconds . . . lasts for years

Now, from General Electric comes the industry's newest, most dependable cadmium-sulphide photoelectric control. Years have been spent in the research, design, and testing of this new street lighting control to produce the most efficient, most reliable cadmium-sulphide control available. Now, after exhaustive testing, the reliability problem has been solved with a custom-built General Electric cadmium-sulphide cell. Shock, surge, humidity, vibration, load, temperature—these were among the tests conducted —but none was found to alter the dependable performance of the new G-E control.

Addition of the new cadmium-sulphide cell is but part of the story. General Electric has developed a new, simplified circuit with specially-engineered long-life components . . . designed and built to work together and to reduce your control costs.

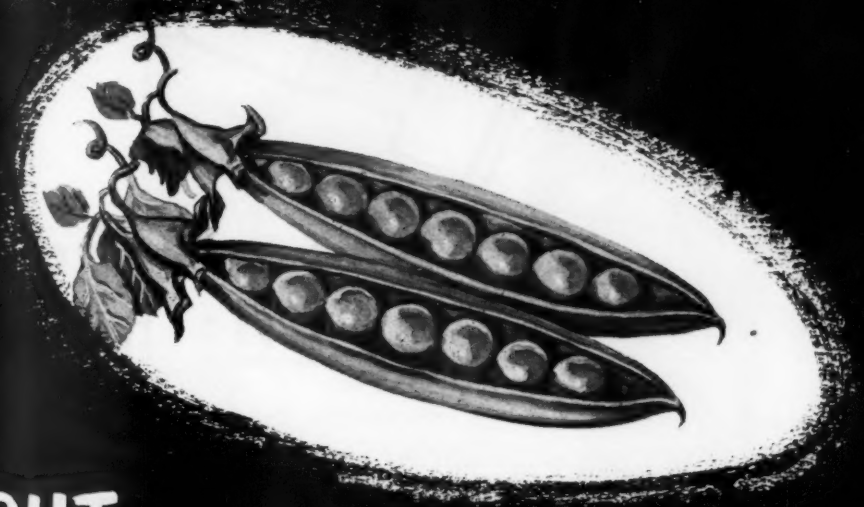
Get the full details from your General Electric Apparatus Sales Engineer or Agent, or write Section 450-25, General Electric Company, Schenectady, New York.

Progress Is Our Most Important Product

GENERAL ELECTRIC

ADVANCED DESIGN FEATURES give: (1) dependability from new G-E hermetically sealed cadmium-sulphide cell; (2) long life from specially-engineered components; (3) built-in protection from voltage surges; (4) power savings through accurate external adjustment. NO VACUUM TUBES OR RECTIFIERS.

They LOOK alike...



BUT...

Most peas look alike, but their quality can vary greatly. So it is with lighting standards. Two steel standards may look the same, but only Kerrigan standards have these plus values:

1. Superior strength, with stronger bracket connections
2. Heavier wall thickness (.130)
3. More resistance to bending—less deflection
4. Drop forged steel anchor base
5. 4 to 6 times greater resistance to corrosion
6. Guaranteed high yield point
7. One continuous longitudinal weld—Magnafluxed
8. Octagon shape—Inherently stronger than the round or fluted
9. Trim, modern lines, architecturally correct

NEW from KERRIGAN — THE CLASSIC Pat. Pending

Send for FREE catalogs on steel and aluminum standards—Address: Dep't. A-9

KERRIGAN
IRON WORKS COMPANY
Nashville, Tennessee

For better lighted streets and highways the STANDARD is KERRIGAN!

take a reading on this meter!

True value is measured by initial cost divided by the years of faithful service.

Hundreds of progressive municipalities have long discovered that only Duncan-Miller meters rate highest in value received. Here's why:

- No winding by city personnel. No inoperative meters due to run-down springs.
- Five-second "lift-out" mechanism. No screws, bolts or tools required. Speeds all maintenance.
- Effective screening of all bent coins and foreign objects drastically reduces jams and service calls.
- Last coin in meter is mechanically ejected into coin box when mechanism is lifted for service purposes. Eliminates temptation.
- Tough . . . rugged mechanism resists abusive treatment. Simple to maintain with minimum of parts inventory.
- Heavy duty, stainless steel and clock brass timer assures long serviceable life. No professional maintenance personnel or expensive factory services required.
- Hundreds of practical time and rate combinations for curb and off-street parking facilities.
- Accepts pennies, nickels, dimes, quarters and tokens. Easily convertible from one combination to another.
- Substantial housing casting highly resistant to attempts of vandalism. Strong, rugged door area protects meter revenue.
- Exclusive patented sealed coin box offers maximum security with only one locked box.

A Demonstration Will Convince You

Write Today

DUNCAN

DUNCAN PARKING METER
DIVISION OF MOTOR PRODUCTS CORPORATION
835 N. WOOD STREET • CHICAGO 22, ILLINOIS

Traffic engineering center in Chicago's City Hall includes central radio dispatcher and a complete file of maps showing details of Chicago streets.

Complex Two-Way System—Smooth Operation

By **RALPH MICHEL**, Associate City Traffic Engineer
Department of Streets and Sanitation, City of Chicago, Ill.

In planning our radio network, we decided 11 separate offices initially needed access to the base station. Three of these offices are located in Chicago's city hall, while the others are scattered throughout the city. This large number of base station control points and 130 mobile units would only create chaos on the radio channel unless a practical, efficient method of control were introduced in the system. Our solution is a cordless, central switchboard operated by the main dispatcher. In effect, this switchboard provides telephone-like efficiency to the system.

The base station and antenna are located on top of the Chicago Board of Trade Building, one of the Loop's tallest structures. The station is connected by wire lines to the main remote control console and switchboard in the radio dispatcher's room in the city's Central Office Building, which is located about one mile away.

From this cordless switchboard connections are made to the main dispatcher's telephone handset and the 11 remote telephone handsets, located in various offices and shops throughout the city. These are known as the remote stations of the system and access to the base station from them can be obtained only through the manually operated, cordless switchboard. Approximately 30 miles of metallic pairs in fire alarm cables constitute the land line network that connects the remote stations, the switchboard, and the base station.

Switchboard

The switchboard consists of 23 vertical rows or panels of buttons, with six buttons in each row. The first vertical row represents the radio trunk circuit, while the last is the dispatcher's panel. All intermediate vertical panels are connected to the subscriber lines terminating at a remote station. Ten extra lines are provided for possible expansion.

The top button in each row is the radio channel, the second, third and fourth buttons are intercom channels (all colored white). The fifth button (colored red) is the ringing channel while the sixth button (colored black) is the release button. There are signal lights above each vertical row and beside each of the first four horizontal rows of buttons.

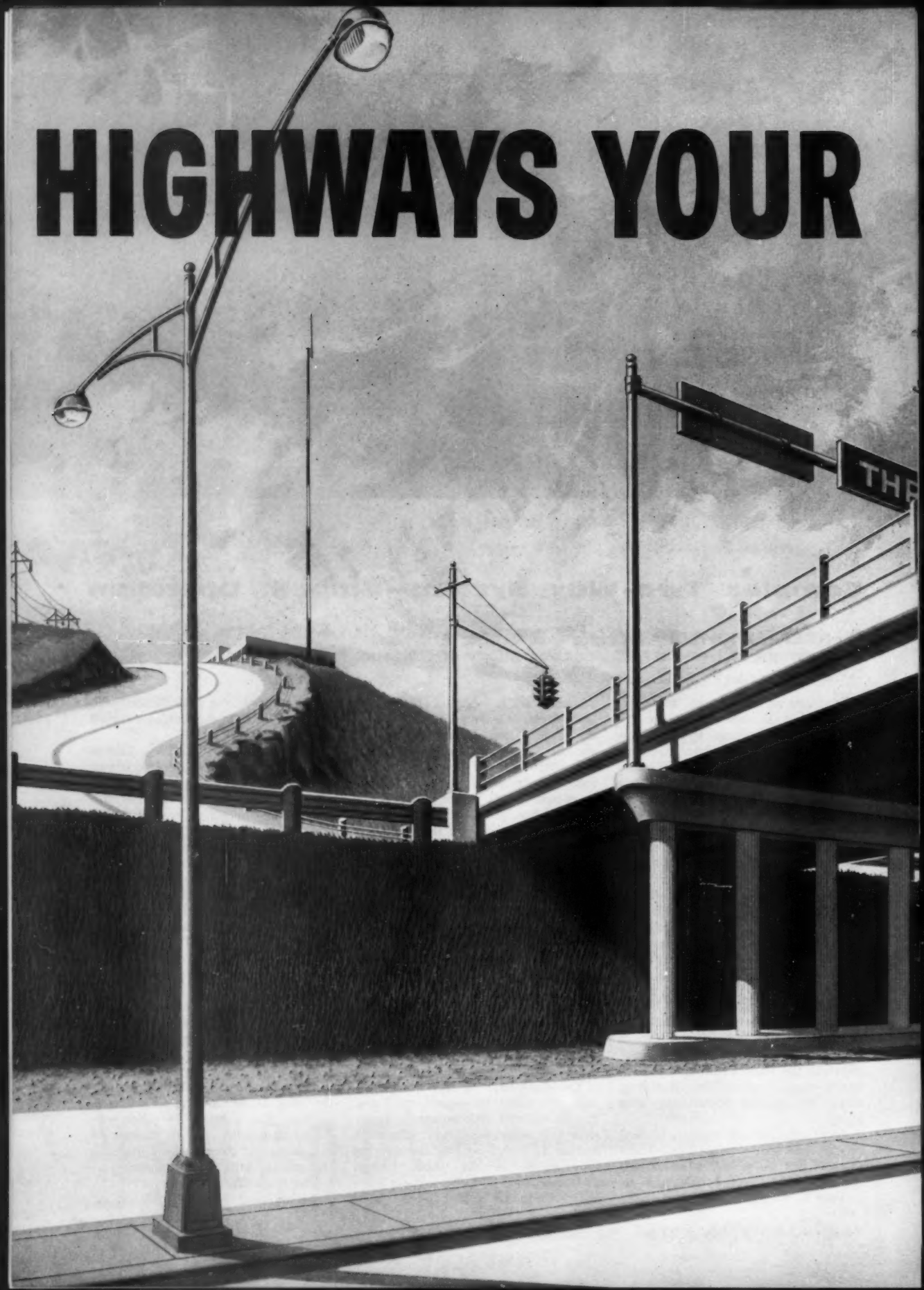
The dispatcher normally keeps the top button of the radio trunk panel depressed as well as the radio channel (top) button of the dispatcher's panel (last vertical row). This keeps his handset connected into the radio channel at all times.

When a mobile unit calls main, the dispatcher is alerted through the console loudspeaker by the message. If a mobile operator wishes to talk with the main dispatcher, there is no further operation of the switchboard required. If the mobile unit wishes to communicate directly with one of the remote stations of the system the procedure is as follows:

After answering the call, the dispatcher presses the radio channel button (top button) on the desired line panel and momentarily presses the ring button on that line, thus alerting the party. He then releases the radio channel button on his panel by momentarily pressing the release button on the panel.

The dispatcher monitors the con-

(Continued on page 145)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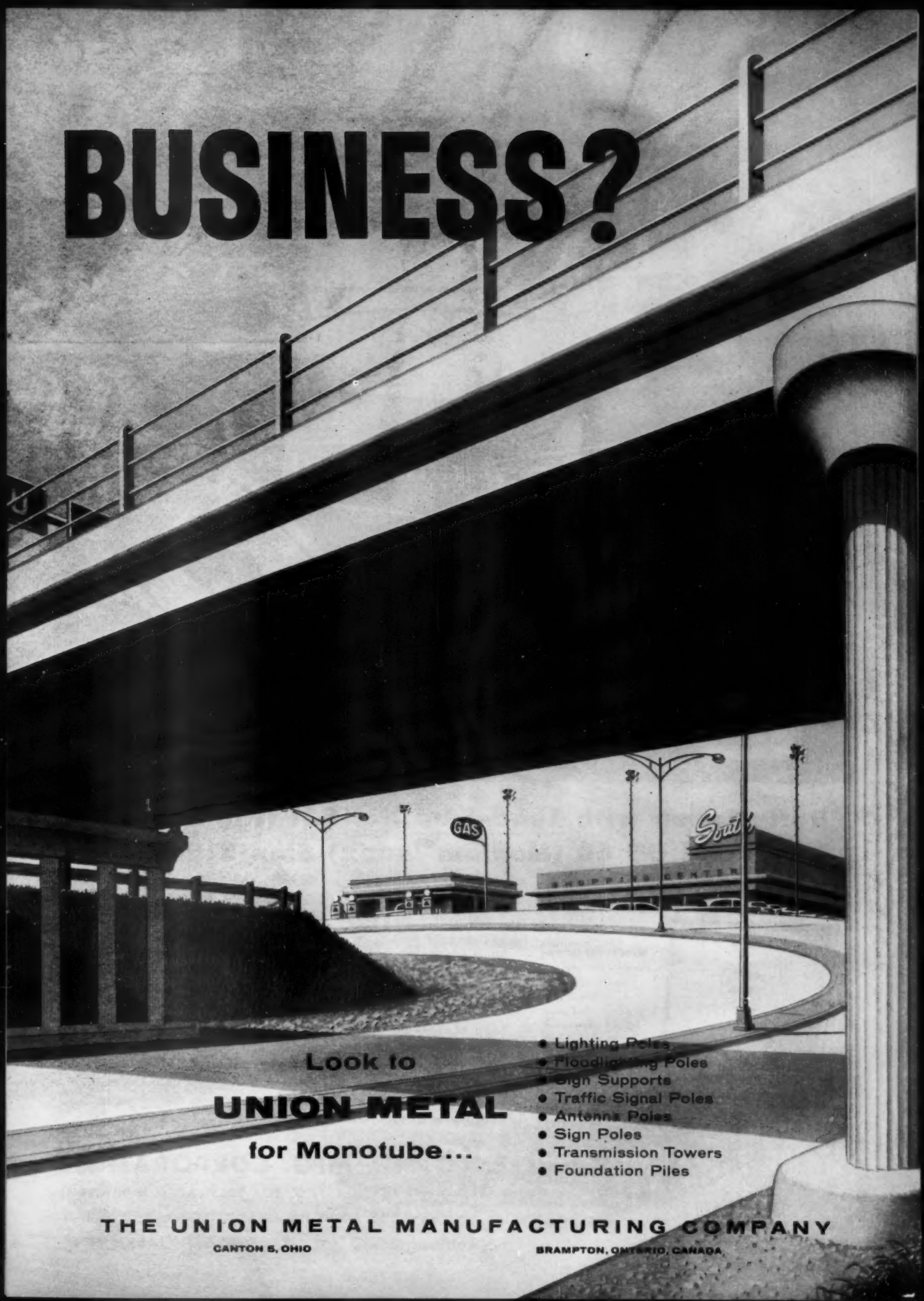
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THE UNION METAL MANUFACTURING COMPANY
CANTON 5, OHIO
BRAMPTON, ONTARIO, CANADA

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Bead budgets go farther . . . the result of better research and engineering and advanced methods of manufacture. And with today's overall improvements in quality, gradation, and application techniques, you have the combination that spells better reflectorized signs for less—with *whitest white, lead-free, optical quality* glass beads by Flex-O-Lite. Write for details.

FLEX-O-LITE

FLEX-O-LITE MFG. CORPORATION

8301 FLEX-O-LITE DRIVE • P. O. BOX 3066 (AFFTON BRANCH)

ST. LOUIS 23, MISSOURI

(Continued from page 141)

versation between the mobile and remote stations through the console speaker.

Whenever a party at a remote station lifts his handset to place a call, the white light above the particular line on the switchboard is turned on and a buzzer is activated, alerting the dispatcher. The operator presses an idle intercom button on the calling line and the associated intercom button on his panel. This extinguishes the light and turns off the buzzer. The operator answers the call.

If the party at the remote station wishes to talk to a mobile unit, the dispatcher presses the radio channel button on the calling line panel, and tells the party at the remote station that he is "on the air." The dispatcher releases his own radio channel, but continues to monitor both sides of the communication over the loudspeaker.

Intercom Calls

Intercom calls between remotes are possible without interfering with the two-way radio conversations. Such calls are established through idle intercom channels. These channels also enable the dispatcher to keep several remotes on a "standby" basis while waiting to get on the air. The intercom facility is also used when the dispatcher wishes to relay a message. This is done when a mobile unit wishes to report incidents or information of a general nature, not dealing with its specific function (e.g., an electrical foreman sees a hole in the pavement). He will call this message to the dispatcher who in turn immediately relays it to the appropriate bureau for action.

The communications system went into operation in the fall of 1958. It was supplied on bid basis by Motorola. The system utilizes two 450 Mc. channels — base station transmitting on #1 and receiving on #2. The entire system consists of Motorola "Private Line" radio equipment. These radios use a tone coded squelch principle, designed to block out co-channel interference.

Coverage

The establishment of the Radio Communications System is another progressive step taken by L. M. Johnson, Commissioner of the Department of Streets and Sanitation, with full approval and cooperation of Mayor Richard J. Daley. The system serves the following bureaus: Electric Wiring and Repairs, Sanitation, Streets, Street Traffic and Parking, Electricity, and Equipment Service.

These bureaus of the Department of Streets and Sanitation are responsible for the engineering, construction, supervision and maintenance of some 5,600 miles of public way within an area of 214 square miles. Street cleaning, refuse collection, ice and snow control, signs, signals, street lighting and markings are some of the functions involved in the bureau's operations.

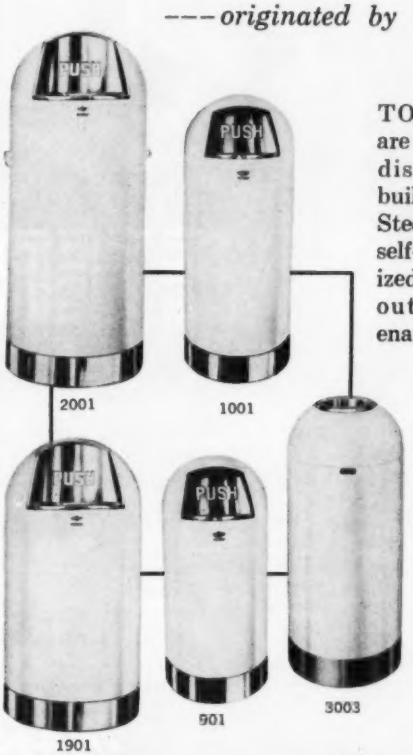
The department has a working force of over 5,200 people and uses over 1200 motor vehicles to conduct its business.

The mobile radios have been installed in a highly diversified group of vehicles, ranging from small passenger cars to giant tow trucks which are capable of handling the largest disabled refuse collection truck.

A unique feature of the system is that certain vehicles, used for street cleaning in the summer and snow and ice control during the winter in the Bureau of Sanitation are radio equipped during their working seasons only. The mobile

Encourage neatness with **TORPEDO**® *waste receptacles*

---originated by **LAWSON**



Attractive, modern-style TORPEDO waste receptacles are the perfect solution to waste disposal problems in public buildings, parks, airports, etc. Steel body, stainless steel trim, self-closing push door. Galvanized inner container, bonderized outer shell, long-life baked enamel finish.

Outer shell lifts easily for quick emptying.

5 SMART MODELS . . .

PUSH-DOOR models:
No. 901 — 12 gal.
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No. 3003 — 16 gal.

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PARK-O-METER

dominates in the 50th State

... In Hawaii there are more Park-O-Meters than all other makes combined. In fact, out of every five parking meters in use in the Island State, three are Park-O-Meters.

Whatever a parking meter may be expected to do, Park-O-Meter does it better!

There is a Park-O-Meter type to meet every specification. Ask for a demonstration or a trial installation.

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PARK-O-METER COMPANY

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Factories in U.S.A., CANADA, ENGLAND

units, interchangeable on 6 and 12 volt systems, are switched as needed to obtain optimum use. All seasonally equipped vehicles carry permanent installations of the radio accessory group, such as wiring, antenna and drawer-type housing.

Putting a large radio system into operation requires more than the mere installation and checking out of the units. Proper indoctrination of personnel expected to use the equipment is also necessary.

To lay down the ground rules, we prepared a 13-page illustrated booklet listing rules concerning authorized use, operating procedures, and a small group of "10" signals. A brief description of how the system works is also included, as well as a directory of mobile call signs, listed on a Bureau basis.

Oral Instruction

Besides the written rule book, each mobile operator has been given oral instruction. The mobile operators received a group indoctrination talk. While the radios were being checked out technically, we had each operator make test calls to break any tendency toward "mike fright."

The major reason for installing radio, of course, was to enable the department to perform a faster and more efficient public service.

While the benefits of radio are largely intangible, there is one result which should be readily apparent to the public. Our patrol cars on the Outer Drive, a very high traffic volume route along the lakefront, are radio equipped. When a car becomes disabled on the Outer Drive, the entire highway at times becomes clogged. The patrolman who sees this calls the main dispatcher with the information. He, in turn, telephones it to the city's AM broadcast stations who warn motorists of the congestion, and arranges for a tow car to remove the disabled vehicle from the highway.

The institution of the Traffic Engineering Center in conjunction with the establishment of the Radio Communications System also provides citizens a place to report by phone inoperative traffic control devices or hazardous street conditions that demand immediate attention.

The Center also makes practical a new patrol system whereby mobile units daily tour all 880 miles of Chicago's primary streets. Any condition affecting safe, efficient traffic control can be immediately reported and corrected.

Guard Your Sewer Lines . . .
Keep 'em clean . . . free flowing
with Sanfax 222

. . . the remarkable, power-packed chemical that burns out tree roots, trash and impediments in record time.

☆ Reduces labor
☆ Slashes maintenance costs
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Also use Sanfax 222 on a preventative maintenance basis for trouble-free assurance.

Thousands of Satisfied Users from Coast-to-Coast

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Low Cost Maintenance

WOOD'S Rotary MOWER

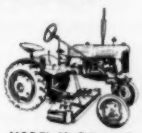
MULTI-JOB MODEL 80 ILLUSTRATED

For lawn mowing, leaf mulching or weed control . . . the combined mowing shredding action of free swinging blades make fast work of big grounds maintenance jobs . . . *quickly, economically.*

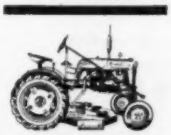
Designed and built by the company who pioneered the development of rotary mower equipment . . . when you purchase a Wood's rotary, you are buying a machine that is proven and guaranteed.

Ask for FREE demonstration. See the features that make Wood's the most copied rotary mower.

30 Wood's models to choose from



MODEL 59 5 ft. swath



MODEL 42 3-1/2 ft. swath

Specialists in the Manufacturing of Tractor Powered Rotary Mower Shredders

WOOD BROTHERS MFG. CO. 54909 South 4th Street, Oregon, Illinois

Our smallest blower . . . the BB series with 36 H.P. Wisconsin engine, Twin-Disc clutch and gear reduction, and final chain drive. There are no V belts to slip in this unit. Mounts on most tractors and loaders. Available—4'4" for sidewalk narrow gauge tractors and 6'6" for most other tractors. Push-frame is pivoted on rear axle and counterbalanced. Hydraulic or manual telescopic and rotating chute. Weight 2000 lbs.

SICARD INC. **BLOWERS LARGE**

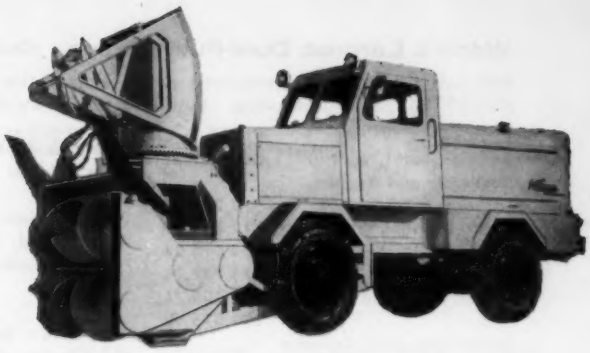
The BB and BM detachable type blowers are sold thru tractor and front end loader dealers. Inquiries invited.

Second in size . . . our BM blower, also a detachable type with 95 H.P. Chrysler or International engine. Ideal for installation on large front end loaders and crawlers. Uses the same principle of chewing the snow before feeding it to the impeller. 8'6" wide x 36" high. Telescopic and rotating hydraulic chute. Weight 4000 lbs.

World's Largest Dual-Fuel Engine

(Continued from page 113)

proximity to an economical fuel



The Sicard Snow Master Junior;
a compact and powerful blower designed principally for municipalities.
Check these features: Chassis: All-wheel-traction, short 100" wheelbase, short turning radius, Chrysler engine with fluid drive.
Blower: dual augers, large turbine for blowing or telescopic rotating chute for loading, powerful Buda auxiliary engine.
Approx. weight 12,500 lbs.

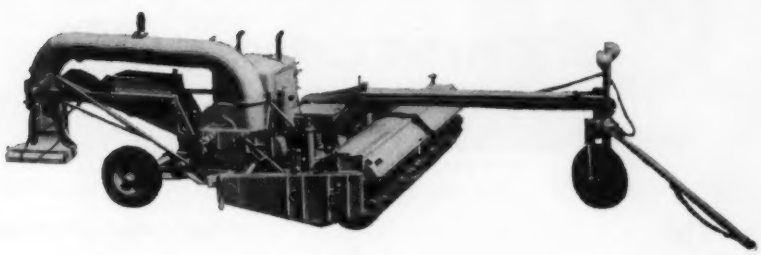
Write for literature and name of local distributor.

AND SMALL

Sicard Snow Master: This unit is recognized as the standard of performance wherever in use throughout the world. The U.S.A.A.F. have recently ordered another 139 of these blowers to add to their growing fleet. Powered to your needs . . . to undertake any snow removal job.
Weight 25,000 lbs. and over.

SICARD INDUSTRIES, INC.
753 West Main Street,
Watertown, New York
Tel. Sunset 2-4600

Sicard Snow Sweeper and Blower is designed for high-speed operation. It will clear light snow to the bare pavement at speeds over 20 mph thus eliminating the snow which often turns to ice. All operations are controlled from the truck by solenoid switches. This winter two of these sweepers will be used on the Laurentian expressway.



World's Largest Dual-Fuel Engine *(Continued from page 113)*

tion cost (including depreciation) of $317,071.02. The following table gives the itemized figures:

Salaries, Light Plant	$64,801.61
Renewals and Repairs, Plant & Equipment	5,273.18
Plant Supplies	2,120.99
Insurance	18,578.28
Depreciation	74,747.93
Water, Light and Heat	5,505.71
Fuel	132,076.57
Lubricating and Cylinder Oil	7,373.30
Engine Maintenance	6,593.45
Production Expense	$317,071.02

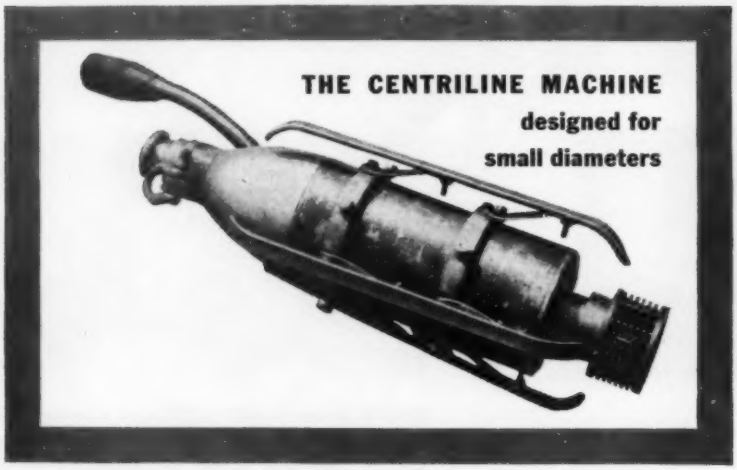
Here's the way it breaks on a cost per kw-hr basis:

	Mills
Fuel (gas & oil)	2.36
Plant Salaries	1.16
Lube Oil	.13
Engine Maintenance	.12
Water, Light, Heat	.10
Plant Renewals, Repairs	.09
Supplies	.04
Total before Depreciation	4.33
Depreciation at 5%	1.34
Total Production	5.67

Ponca City is fortunate in its proximity to an economical fuel supply, paying an average of 17.5 cents per mcf for gas and 9.6 cents a gal. for pilot fuel, but clearly this is but one of the factors in the low cost of power production. There is evidence in every item of efficient equipment and a well-run plant. Consumption of fuel and lube, it has already been noted, is low. Engine maintenance for the year cost $6,593.45, an average of only 22 cents per installed horsepower, in a plant where engine age ranges up to 35 years and three units have well over 100,000 hours of service.

To return to fiscal 1958, costs of distribution totaled 2.79 mills per kw-hr and financial expenses (including interest and taxes) amounted to 1.43 mills, bringing the total expenses of the Light Department to 9.89 mills. It is Ponca City's policy to charge its consumers rates equal to the average of other Oklahoma cities. This brought in revenues of $1,473,836.28 and left a clear net profit for the year of $920,582.52. In the past ten years, power profits have totaled a whopping $7,017,-119.03. This money goes for civic improvements and to pay operating costs of the city government, thus reducing general property taxes.

NOW! THE CENTRILINE PROCESS is available for 6" to 14" mains, too!



Yes, your city's small but important transmission and distribution lines can also regain their original flow capacity and pressure through the universally accepted Centriline Process of centrifugally applying a cement-mortar coating to the pipe walls. If some of your lines inadequately serve your customers' requirements, including higher demands for fire protection, investigate the numerous advantages of Centrilining your mains now.

The new, small diameter Centriline Machine eliminates most excavations at valves, laterals and corporation cocks. By eliminating these fixed costs, lengthening the distances between access openings and permitting faster lining speeds, the new Centriline Machine has really reduced the cost of lining small mains. So much so, in fact, that every water works operator should reevaluate the economics of small pipe rehabilitation.

Send today for your copy of our illustrated booklet which fully describes how Centriline can help you salvage worn out pipes from 6" to 144" in diameter permanently and for much less than you would imagine.

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Branch Offices in Principal Cities of the United States, Canada and Latin America.

Code of Ethics For City Employees

A code of ethics for city employees, adopted by the Costa Mesa, Calif. City Employees' Association, was presented to the City Council at its June 15th meeting. Mayor John W. Smith, in accepting the code, pointed out that only the close team-work of employees and administration had enabled the city to cope with the problems created by a population that has doubled in the five years since the City of Costa Mesa was incorporated.

CODE OF ETHICS

As a City Employee, I believe in the City I work for, ever mindful of the public's interest.

I will endeavor to perform my duties with dignity, integrity and loyalty.

I will be thoughtful in my criticism and liberal with my praise, reflecting neither malice nor ill will.

I will constantly strive to work with my fellow employees to keep alive the spirit of cooperation, rather than competition.

I will uphold and defend the ideals of my community, recognizing the duties of my office as a symbol of public faith.

Adopted on April 14, 1959

THE GREATEST NAME IN FIRE APPARATUS

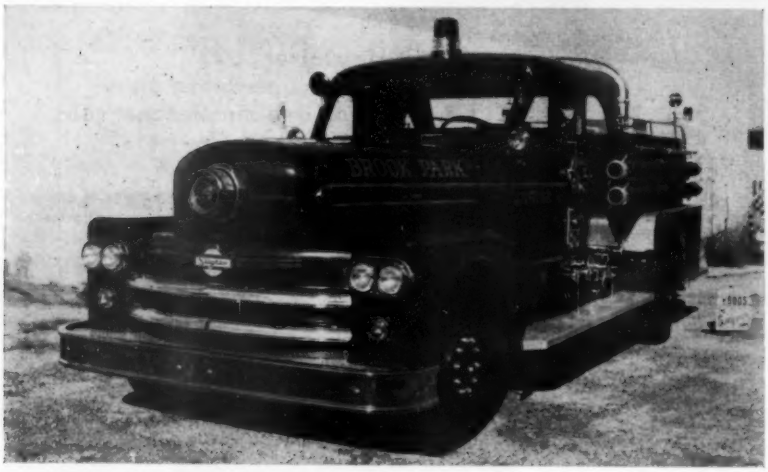
Seagrave PRESENTS

THE MOST COMPLETE LINE OF FIRE APPARATUS IN THE INDUSTRY

CAB FORWARD

IN PUMPERS AND AERIAL LADDERS

Perfect balance, safer construction, easier handling plus Seagrave advanced engineering places the Seagrave Cab-Forward far ahead of other cab-forward designs.



ENGINE--AHEAD-OF-CAB

IN PUMPERS AND AERIAL LADDERS

Seagrave continues the manufacture of the conventional engine-ahead-of-cab models with constantly improved and modernized designs.

COMMERCIAL

IN PUMPERS AND AERIAL LADDERS

THE SEAGRAVE CORPORATION — COLUMBUS 7, OHIO • King-Seagrave Ltd. — Woodstock, Ont.

A 9' power-sliding moldboard picks up and carries loads smoother and faster.

H-W Maintainer Offers Real Job Versatility

Whatever the job requirement . . . you can count on the versatile Huber-Warco M-52 Maintainer to turn in top performance.

The H-W Maintainer is a 45½ h.p. unit . . . weighs 6,250 lbs. . . . and features a torque converter. Working speeds range from 1.7 to 8 m.p.h., and a travel speed of 21 m.p.h. permits quick movement from job to job. The Maintainer is an all-purpose, year 'round performer, capable of outperforming many machines that are larger, heavier, more costly, slower, more expensive to operate and more limited in use.

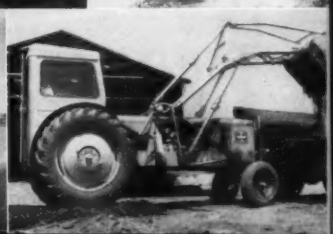
With hydraulically cab-controlled attachments, the Huber-Warco Maintainer will perform service as a lift-loader, bulldozer, broom, snow plow, scarifier, side dozer, berm leveler and patch roller. This versatility makes it an ideal machine for all types of construction and maintenance assignments.

Your Huber-Warco distributor will be happy to give you complete details about the M-52 Maintainer . . . in fact, he will even give you a demonstration of the outstanding performance of the Maintainer. Your Huber-Warco distributor can arrange terms up to 36 months for you on the purchase of a new machine, or provide you with a rental unit. See him soon.

Huber-Warco on the job

M-52 Maintainer . . .
a top performer on all construction and maintenance jobs.

Hydraulic attachments permit the H-W Maintainer to perform service as a bulldozer, scarifier, berm leveler and lift-loader.



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MARION, OHIO

HUBER WARCO

TANDEM ROLLERS

MOTOR GRADERS

MAINTAINER

3 WHEEL ROLLERS

After six years. refuse buried in Charlottesville's sanitary landfill looks like this.

Here fresh refuse is being dumped in an area provided by dozing decomposed refuse over the bank (background).

We Rework Our Sanitary Landfill

. . . and find no troublesome odor or operating problems

By **R. E. HALL, Jr.**
Superintendent
Public Service Department
Charlottesville, Va.

With the curb collection system. a driver and two men can make between 400 and 700 stops per 9-hour working day.

We have found that we can open and rework a sanitary fill safely and without nuisance after no more than six years of time. Many have warned that one never should disturb a sanitary fill but we have not found this to be true.

To the casual observer, our sanitary landfill is no different from most others of the same type. We use the area method, working on a 40.3-acre plot located about one mile outside the city limits. This plot is long and relatively narrow, with the long side bordering a small stream on one side and a road on the other. The wooded bank rises steeply from the stream, confining our operations to that half of the plot lying adjacent to the road.

However, our operation differs from others of the area type in the manner by which we plan to fill the entire plot up to the small stream. We started to dump at this site in 1951 and in six years covered the entire flat portion adjacent to the road to a depth of about 12 feet.

When this was done, we went back to the starting point and, using several bulldozers, pushed the old fill toward the creek to make room for more fill.

We found that after six years all garbage is decomposed but some paper and rags are still in good condition. Ferrous metals without such protection as galvanizing were also pretty well rusted away. The disturbed material packed solidly and the only odor was a musty one.

This was done for the first time two years ago. Each winter, during the slack season we utilize street department equipment in addition to that used at the fill site to push sufficient material toward the creek to provide room for another year of sanitary landfill operation.

Unfortunately, we do not weigh refuse collected but merely keep track of it on a load basis. For example, during the month of January 1959, the following amount

Applying Columbia Calcium Chloride is the fast, low-cost way to build high surface density.

COLUMBIA CALCIUM CHLORIDE

helps your roads through late fall and winter

Within the next few weeks, your crews will have finished putting roads in shape to stand up under late fall and winter weather conditions: patrol blading, adding aggregate or binder soil where needed—and spreading Columbia Calcium Chloride.

The dense, compact surfaces resulting from Columbia Calcium Chloride resist rutting and pot-holing infinitely better than untreated roads. Motorists enjoy smoother, safer driving. Fewer bladings are necessary; new material requirements are cut. Maintenance costs show marked improvement right through the year. Helps you meet your road budget.

And, with winter's snow and ice just a few months away, you'll want to order Columbia Calcium Chloride right now for ice control and for treating abrasive stockpiles to prevent freezing. Check to make sure you have adequate stocks of Columbia Calcium Chloride on hand before the first snow flurries. If you're running low, just call our nearest District Office or write our Pittsburgh address to place your order.

Columbia Calcium Chloride mixed with abrasives or salt provides ice removal that's both fast and economical.

COLUMBIA-SOUTHERN CHEMICAL CORPORATION

A Subsidiary of Pittsburgh Plate Glass Company · One Gateway Center, Pittsburgh 22, Pennsylvania

DISTRICT OFFICES: Cincinnati · Charlotte · Chicago · Cleveland · Boston · New York · St. Louis · Minneapolis · New Orleans · Dallas · Houston Pittsburgh · Philadelphia · San Francisco IN CANADA: Standard Chemical Limited

of material was brought to the site:

451 city truck loads
98 truck loads from the University of Virginia
504 loads from various sources.

This material was mixed refuse and all disposed of by the sanitary landfill method. In addition, nonputrescible material such as building material, tree limbs, and certain industrial wastes are deposited at the site, but not in the sanitary landfill area. In January, city trucks hauled 106 loads of this material to the site and private trucks and other vehicles contributed another 95 loads.

We maintain at the site an International TD-18 and an Allis-Chalmers HD-9, both equipped with a Drott Bull Clam. The TD-18 is used daily to crush and cover the incoming refuse, while the smaller machine is used periodically as it is needed. Cover material is presently obtained from the natural bank ahead of the fill. An 8-foot-high fence of chicken wire keeps papers from blowing away.

Our collection fleet consists of 11 Gar-Wood Load-Packers mounted on Dodge and International chassis. Bodies range from 9 to 16 yards.

The crews include a driver and two loaders, with the driver helping as he is needed. All residences receive two collections a week while commercial establishments receive up to six collections a week. The industrial firms handle their own trade wastes. Pick-ups are made from the curb and each truck makes from 400 to 700 stops every 9-hour day, depending upon the area, traffic and amount of material at each stop. In the case of apartments having five or more family units, we will collect from a single designated place on the premises if an adequate drive is available.

The city is divided into a northern and southern section, with collections in the northern section on Monday and Thursday and in the southern section on Tuesday and Friday. The collection crews handle other details on Wednesday.

The cost of refuse collection and disposal comes to about $4.50 per capita per year. This is covered by the city's general fund. The University of Virginia, although within the city, is situated on county property. The University hauls its own refuse but pays the city $150 per month for the privilege of dumping at the landfill site. Industrial and private collectors working for industry within the city use the disposal site without charge.

Predict Residential Trend in Central Cities

Central cities in metropolitan areas will probably become more residential instead of less, according to Otto L. Nelson, vice president in charge of housing, New York Life Insurance Company. He made the forecast at a University of Michigan symposium on "The City in Transition."

Increased travel time between suburban homes and work will be a powerful factor favoring the development of "central city" living.

At the same symposium, John W. Hyde, University of Michigan professor of planning, forecast changes in the composition of downtown areas, with less emphasis on manufacturing and more on wholesaling, banking, government, and other types of service. In many instances, he explained, these activities represent a more efficient use of urban land. Certain types of manufacturing operations may actually dilute a city's tax base, he declared.

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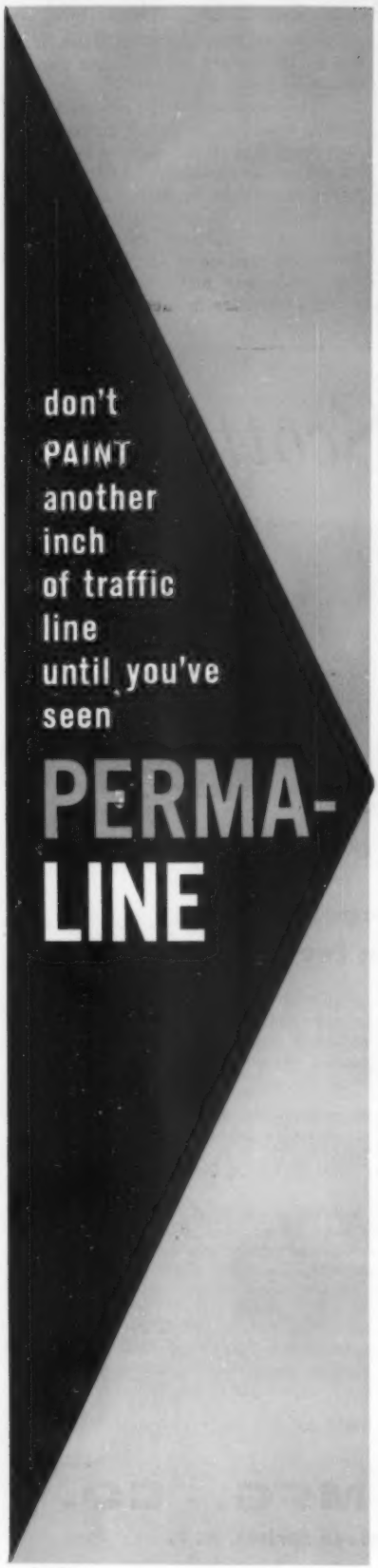


Citizens' Development Committee

. . . provides link between local government and public, wins grass-roots support for needed municipal improvements

By **BURRELL COHEN**
Director of Planning
Lancaster, Pa.

Programs of community planning, urban renewal and central business district revitalization require much study and advance planning by professionals. In the end, however, policy decisions which trigger the action on professional proposals and recommendations must be made by the elected official. It was this desire for intelligent decision-making at the legislative level that directed Lancaster's Mayor, Thomas J. Monaghan, to appoint a Citizens' Development Committee.

Need for Communication

Realizing the fact that both the elected official and the professional staff were employed and directly responsible to the citizenry, and further recognizing the fact that so often the line of communication between citizen desire and policy-making is non-existent, he felt it vitally necessary that an adequate line of communication be constructed between the two so that his administration's development program might meet with thorough public understanding.

With this in mind, Mayor Monaghan requested that the city Planning Commission look into the feasibility of creating such a citizens' organization. The Planning Commission, in a brochure entitled "Suggested Outline for Organization of Citizens' Development Committee," set forth its ideas. Specifically, the Planning Commission's proposal called for the organization of a citizens' committee of 50 to be selected from a variety of occupations. It was suggested that the original committee be appointed by the Mayor and that a Board of Directors, called the Development Cabinet, be organized to direct the operations of the Citizens' Development Committee. The Development Board was to be composed of the Citizens' Development Committee Chairman, Vice-Chairman, Treasurer, Secretary and five others from the Committee. The Development Board would serve as a Board of Directors whose chief responsibilities would be to give leadership and guidance to the Committee's program, establish committee policy and meet monthly with the Mayor to discuss the Development Committee's progress and advise the Mayor of the Development Committee's recommendations.

The Citizens' Development Committee was divided into working committees, each headed by its own chairman. The Planning Commission report included a suggested list of working committees which included Codes and Ordinances, Housing, Parks and Recreation, School Facilities, Parking and Traffic, Central Business District, and Health and Welfare. For purposes of better co-ordination and communication between the Development Committee and various city departments, as well as the city Planning Commission, it was further suggested that the city Planning Director serve as the Development Committee's Coordinator and that both he and members of his staff be made available to the Committee and its various working committees when needed. Using the Commission's suggested organization plan as a guide, Mayor Monaghan proceeded to discuss the organization of a Citizens' Development Committee with civic leaders.

Already Effective

Although recently organized and still in its infancy, the future of the Citizens' Development Committee appears bright. It has already been influential in crystallizing the need for a comprehensive "plan of action" to re-vitalize Lancaster's Central Business District. As a

direct result of the Committee's influence, the Mayor has requested that the Planning Commission present him with the best and most expedient method of obtaining a constructive program in our downtown area.

Also, a proposed new building code, submitted to the City Council for its consideration by the Planning Commission, is currently being reviewed by the Development Committee's Codes and Ordinances Committee. Likewise, the Recreation Committee is currently studying a proposed reorganization of the City Recreation Program and should be an influencing force in determining the course of action which will be taken by city officials to supply recreational needs.

Metropolitan Problems

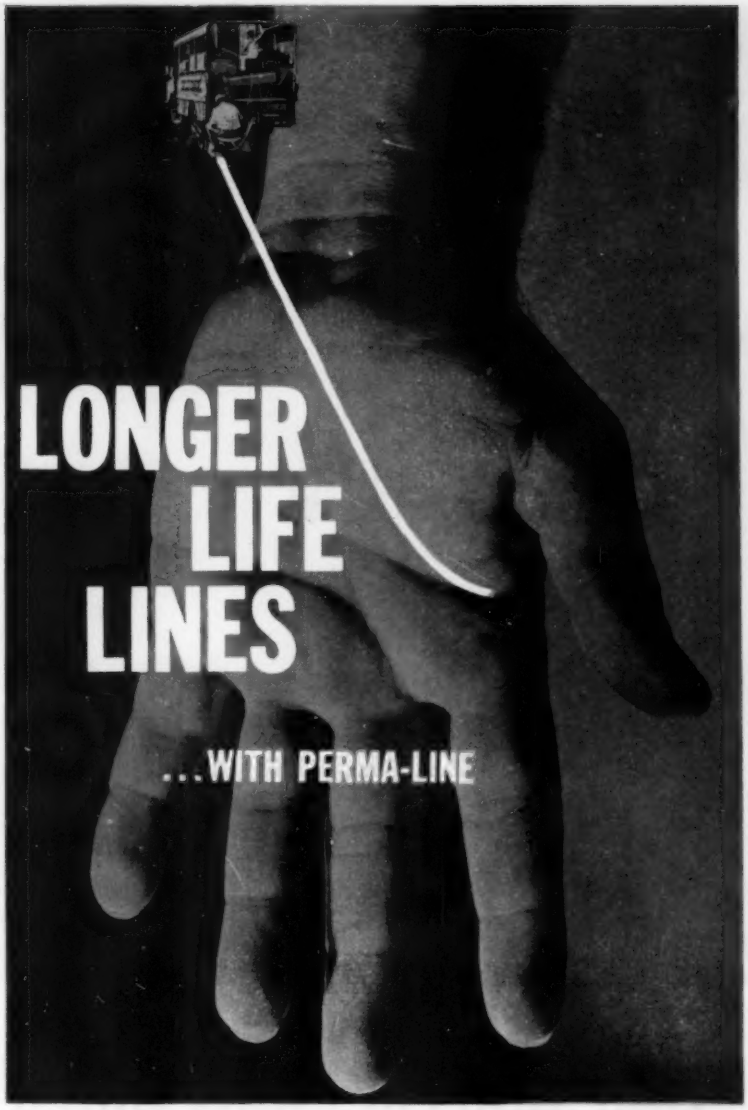
To those who would suggest that the structure seems unduly complicated, we would suggest that Lancaster is a metropolitan area, and its problems are no longer simple problems, that coordination will be to the best interests of orderly action. Success of the new Citizens' Committee will be dependent to a very large extent on the competence of the men and women who will serve.

City Official Claims Record For 60-Year Service

Thomas Bowlus, 85, believes he holds some sort of a national record. He recently completed 60 years of continuous service as a city treasurer for Iola, Kansas. Mr. Bowlus took over the "city books" in 1899 and has been re-elected custodian of city funds every two years since that time.

A native Iolan, Bowlus has served as president of the Allen County Bank there for many years. At an age when most men are sitting back taking it easy, Bowlus is busy as ever, not only with banking work, but in civic affairs. He is active in Rotary, Elks and Chamber of Commerce work, and belongs to several clubs.

Bowlus never married and has never cared much for travel, though he did slip in a trip to Europe about 20 years ago. He has served under 20 different mayors during his six decades of public service and has worked with nearly three dozen different city councilmen during the three score years he has been city treasurer.



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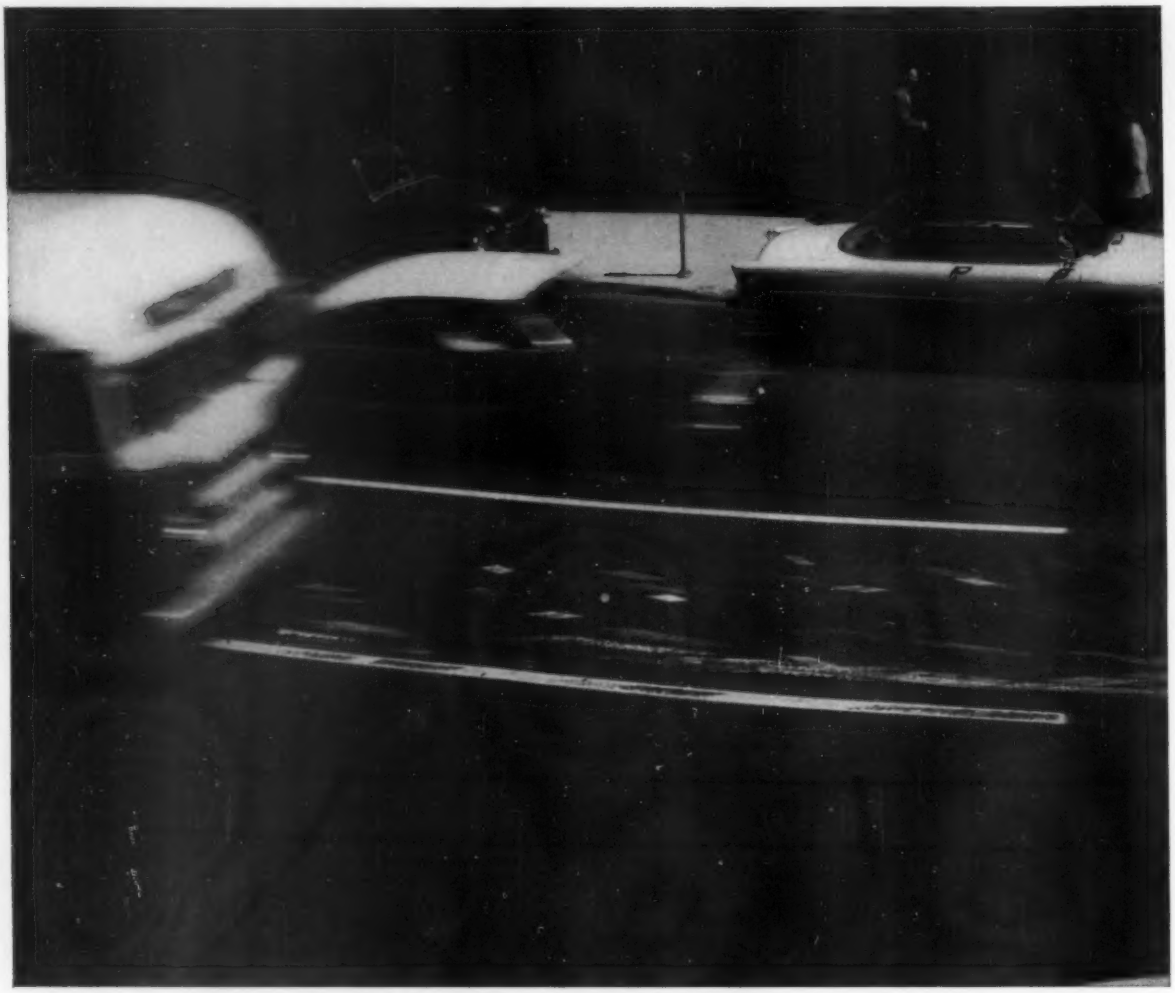

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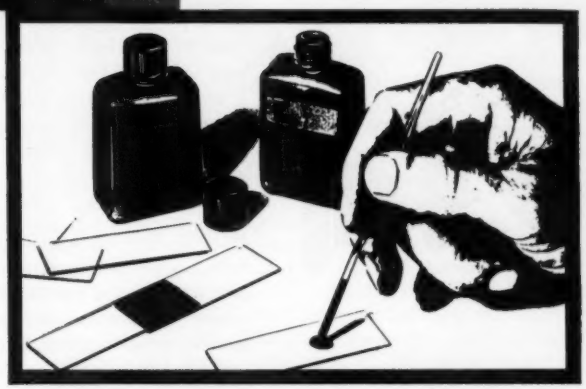

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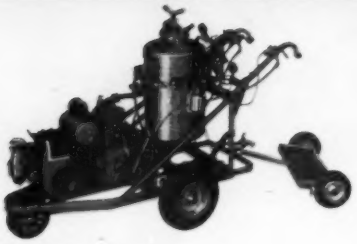

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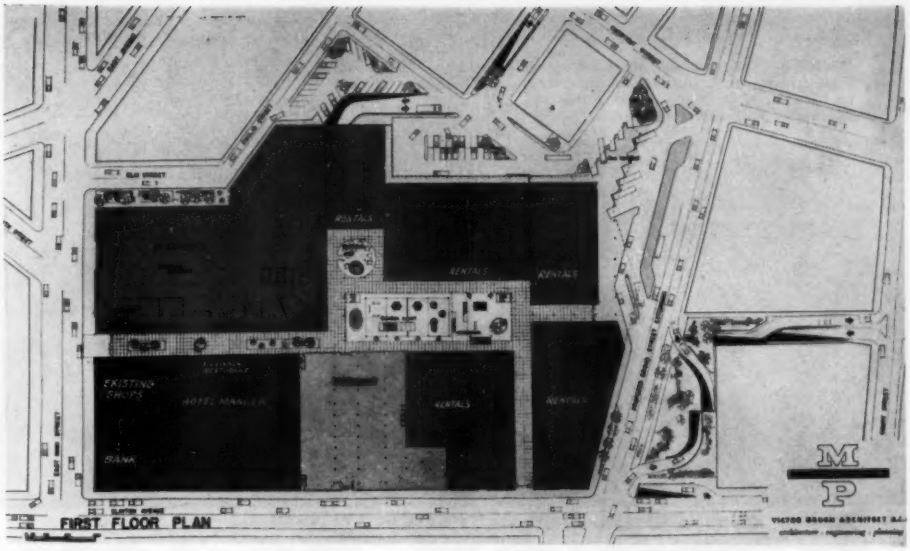

First floor plan of Rochester, N. Y. Midtown Plaza described in The American City, March 1959. A projected underground garage will take the place of parking spaces on the surface of this site.

No More Offstreet Parking In Congested Areas

By VICTOR GRUEN
Architect and City Planner
New York, N. Y.

New York City's new zoning resolution, discussed at a hearing before the city's Planning Commission on April 13, very sensibly and realistically is based on a concept of a city that can grow to a population of some 11 million persons and no more. This constitutes a very important, significant and valid planning concept. But the new zoning resolution not only neglects to deal with another new kind of population group, namely the automobile population with its insatiable space needs, but on the contrary practically enforces a new tremendous growth of such automobile population by requiring that "off-street parking be provided in all residential districts and in all commercial and manufacturing districts except for the most congested downtown areas."

That the authors of the new zoning resolution are aware of the dangers is indicated in their summary in which, under the title of "Off-Street Parking Regulations" they state, "Since 1947 the tidal wave of half a million more automobiles owned by residents of the city has swept New York into the unenviable position of having traffic problems comparable with Detroit and other 'automobile cities.'" They mention later on that today 900,000 persons, about half of the people who are employed outside Manhattan's central business district, now drive to work.

The otherwise excellent preface contains the statement that one of the three basic elements on which zoning controls have to be applied is "the *deference* to the role of the automobile." This is an expression by which I am seriously disturbed. It is my opinion that no planning effort should defer to machines but should defer solely to human beings. If ever we allow the automobile to become our *master* to whom we have to show deference instead of our servant showing deference to us, we are decidedly wrong.

What is not recognized in the new zoning resolution is the fact that a new land use of most destructive qualities has developed: the automobile as means of mass transportation. This new land use which occupies nearly one-half of our total city area now has qualities which makes it much more dangerous to human activity and residential areas than any other use, whether industrial or commercial. It brings with it mortal dangers, fumes, gases, noise; it tears community patterns into shreds. That its danger is recognized by the people at large is witnessed by daily events discussed in our newspapers. Just recently the papers brought the news of the protest of the Murray Hill residents against the widening of 37th Street which would involve the loss of many old trees, some 50 feet high, and thus endanger the desirability of this residential area. A short while ago we read of the decision to close Washington Square Park to traffic—a decision which was due to tremendous popular pressure.

The separation of transportation areas and car storage areas from human activity areas and residential areas is a much more important problem than the separation of any of the human activity uses or residential uses from each other.

The automobile has an insatiable appetite for space. It needs about 300 sq. ft. when stored in its home quarters; 300 sq. ft. when stored in its place of destination, and 600 sq. ft. on its way. It further needs about 200 sq. ft. for those places where it is sold, repaired and serviced. Thus, an automobile needs 1400 sq. ft. of living space. That is about equal to the living space of a family unit.

As new housing is being built, as the final goal of 11 million inhabi-

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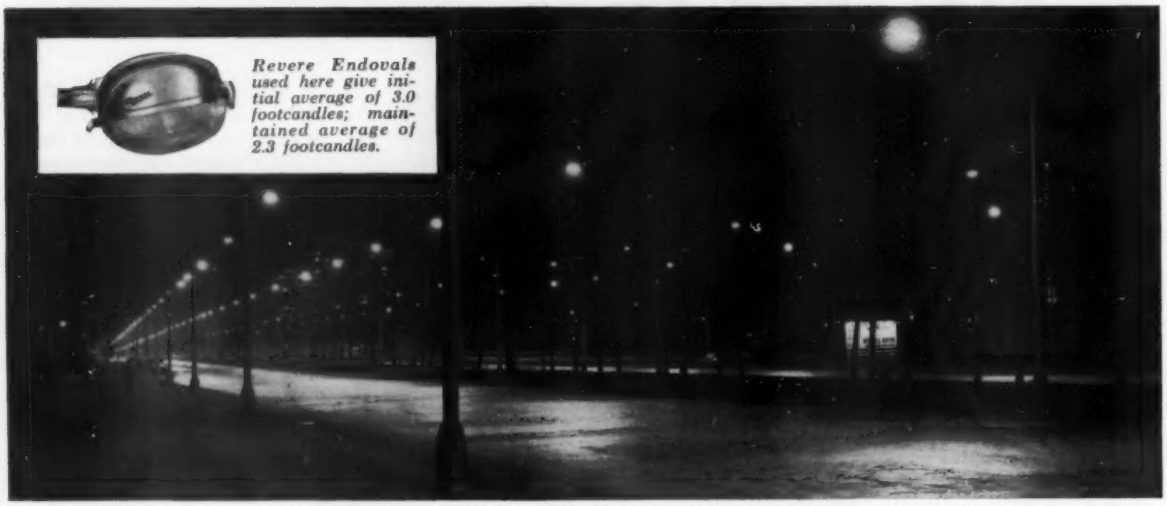

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tants is reached, and as old housing is replaced by new housing, all 11 million inhabitants of New York will have to have one-car space per family unit. That will give us about 3 million automobiles in New York City. These 3 million automobiles will need, as their living space, 4.8 billion sq. ft. of area, or 120,000 acres, most of which will be ground area. The total land area of New York is 204,000 acres.

If New York wishes to remain urbanized, it must not defer to the automobile. It must change decisively its present policy of facilitating rubber-wheeled traffic and thereby destroying public transportation. It must construct new and better public transportation facilities. Automobile traffic in urban areas must be discouraged.

I am, therefore, in favor of striking out all requirements for off-street parking facilities in all New York areas and forbidding the construction of parking facilities in areas now overly congested.

New York in most respects is no different from other American urban areas. They are all plagued by traffic congestion and the deterioration of the downtown area on the one hand and by the danger of metropolitan explosion on the other. Nearly every city, in its zoning and planning procedure, has tried to adjust to the Automobile Age by throwing the doors wide open to the automobile; by bringing freeways and expressways right into the city, or routing them straight through it; by providing off-street and on-street parking facilities; by widening streets, and by generally promoting urban sprawl.

Because automobiles consume space at a fantastic rate for their movement, their storage, their selling and their care, the urban fabric has been loosened to such a degree that some of our downtown areas, seen from the air, seem tremendous parking lots, made inefficient by the few remaining buildings which interrupt them.

Depending on the degree to which the motorization of downtown areas has progressed, city core areas have deteriorated physically and economically more or less seriously. In some cities (Los Angeles, for example) downtown has lost its predominance as the leading shopping or social center, and this role has been inadequately taken by outlying suburban conglomerations.

The plans which our office has developed for cities throughout the country embody the principle of creating compact and densely developed activity areas, including retail areas, office areas, industrial areas, which are kept free on the surface from mechanized traffic. They are established as pedestrian districts of a size and character which make walking convenient, and they are surrounded by traffic areas which are immediately adjoined by car storage facilities. Great stress is laid on improved public transportation, which is either carried underground to various points within the pedestrian areas or for which terminals are provided to bring the user of public transportation near the center of pedestrian districts.

In the case of the New York Zoning Resolution, we oppose those parts which require every new building to provide parking facilities, because in our opinion such requirements would draw automobile traffic to an even higher degree than is the case today into the very midst of human activity and residential areas, and thus destroy community characteristics and the cohesiveness of business areas.

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FIRST...WHEN SECONDS COUNT

Better Fire Protection Proposed In Contra Costa County

By **J. P. McBRIEN,**
County Administrator
Contra Costa County
Martinez, Calif.

Contra Costa county should merge nine of its present 21 fire districts into one County Fire Protection District. This consolidated district should then utilize the County Communications Center as the central dispatching agency with a common emergency telephone number for the area. The present pattern of fire districts was formed in an earlier day to service a scattered population of 20,000 to 25,000 residents. These nine districts now must service a homogeneous population of over 150,000—within ten years it will be 250,000—in an area which is essentially one large community.

Fire ignores boundaries and can be controlled only by adequate men and equipment. It is recommended that the central area become one fire protection jurisdiction. The National Board of Fire Underwriters recommends the following distribution of fire companies:

Type of Area	Engine Company	Ladder Company
High value (mercantile or manufacturing)	¾ mile	1 mile
Closely built residential	1½ miles	2 miles
Scattered residential	2 miles	3 miles

In the area under discussion these standards reveal three instances of expensive overcoverage (fire houses too close together). Each separate district is concerned only with its own protection, as that is the reason for its existence. A district, therefore, generally tends to build fire houses well within the district in order that 360° response is of the greatest benefit to the district. Yet, when this is done, residents who live near district boundaries are less protected, even where these areas are heavily populated. If the district does build near a boundary its responsibility is to its own people. The neighboring district may well be doing the same thing.

With boundaries removed, fire house location is a relatively simple matter of a master plan. The nearest fire station men and equipment would automatically respond to any call. All necessary manpower and equipment would be immediately available to respond to almost any type of fire or multiple fires. Mutual aid cannot as quickly accomplish this. No criticism is intended here of the mutual aid program in this county. It is generously given but there is a built-in delay. A large department would provide automatic move-up coverage for any area where a fire is in progress. This latter additional equipment can be dispatched immediately.

Duplication of equipment is eliminated. Excessive personnel to man this duplicated equipment will become unnecessary. A large department would use and could afford more ladder trucks, salvage trucks, large volume pumping equipment, large stream appliances, hydraulic jack hammers, etc. At present, this type of equipment is not always available to smaller jurisdictions.

Other Districts

Two other fire districts should be merged into one County Fire Protection District with a paid chief. The Brentwood and Byron Fire Protection Districts are essentially one rural area. Except for the City of Brentwood, which is in National Board of Fire Underwriters Class 6, the greater part of both districts is in Class 9. The likelihood of this class being bettered without extensive financial outlay is slim.

The Board of Fire Underwriters has stated that the only way these rural districts (where the basic water supply cannot be improved) could, under present circumstances, better their fire class to at least a Class 8 (an approximate 40% fire insurance cost savings) is to locate and make plot maps of fire fighting water sources, showing capacity and means of ingress to each source and also to build up a water tanker

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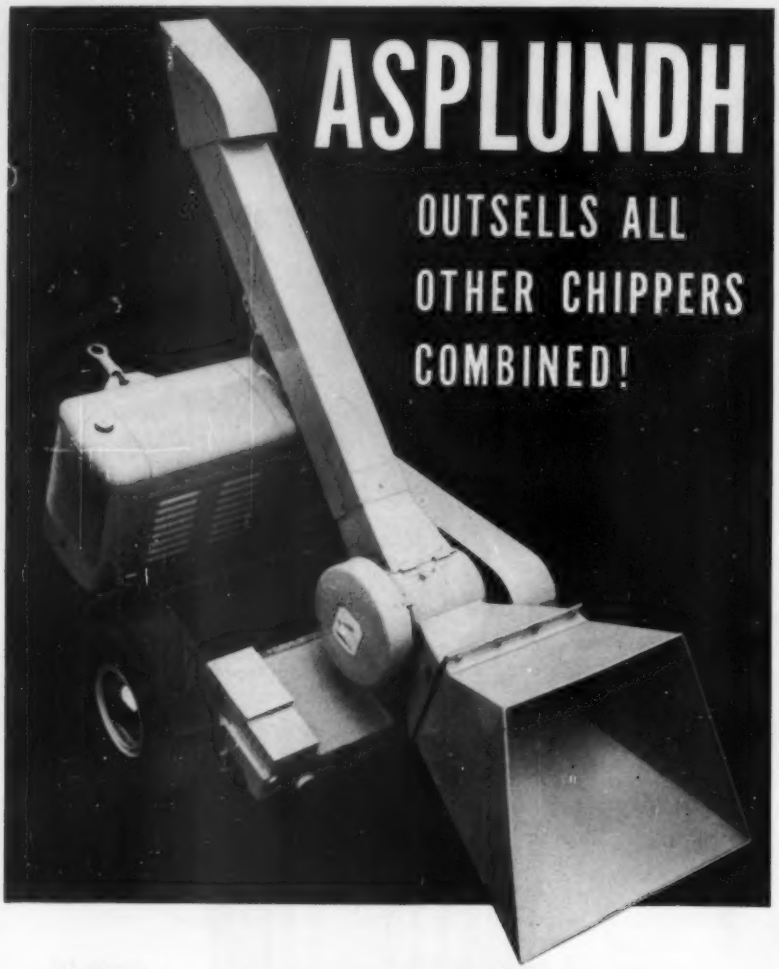

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system. This would be financially difficult for the two districts to accomplish separately.

Fire Prevention Code

The chief of the large central fire district should be made ex-officio County Fire Marshal, or Warden, and there should be one Fire Prevention Code effective in all fire districts.

On May 6, 1940 the Board of Supervisors passed Ordinance No. 279 establishing two offices of County Fire Warden, one for the western and one for the eastern half of the county. This ordinance also established regulations pertaining to fires and fire menaces, etc., in the unincorporated area of this county not within any fire district. This ordinance is almost completely outmoded.

Few people know the identity of the two County Fire Wardens or their duties and responsibilities. Much of the scope of the County Fire Wardens has shrunk to the few small areas left within the county not included within any fire district. It is recommended that this ordinance be up-dated and broadened into a County Fire Prevention Code, effective in all of the fire districts.

The proposed County Fire Marshal or Warden should be authorized to appoint such deputy fire marshals or wardens as may in his opinion be needed. The deputies for this function could be fire chiefs of duly organized fire districts. In this way it is felt that responsibility is centered in one office, yet the operating function is decentralized for the convenience of the residents of the county.

Equipment Repair and Maintenance

All fire district rolling stock should be maintained and repaired by county vehicle maintenance personnel. Fire equipment repair and maintenance is presently accomplished in various forms by the several districts. Most districts do an appreciable amount of their own repair and maintenance, which reflects favorably in the district budget. Items of repair and/or maintenance beyond the scope of the individual district are currently sent to various repair facilities, ranging from local garages to manufacturers of fire equipment. Several of these are appreciable distances away. The county is planning new central service facilities where no anticipated physical plant problems are foreseen.

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FOR EVERY JOB APPLICATION

P & K all-aluminum standards are available in such a wide range of styles, sizes, and heights, that they offer virtually unlimited architectural design possibilities. They meet all requirements for strength and durability, and, most important, provide a basic beauty matched by no other material.

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In addition to the strength, light weight and corrosion resistance inherent in aluminum, P & K has provided several exclusive features of its own: for instance, P & K's tapered elliptical one-piece arm design means a minimum inventory of parts, P & K features rivnut mounting to speed installation, P & K's one-piece base welded to the shaft means no expensive field assembly, and many more. The sum total add up to faster installation at lower cost.

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With such a wide range of styles to choose from, backed by extensive production facilities, you can select standard units that will exactly meet your specifications. And for savings that go far beyond the original cost, consider this: P & K aluminum standards never need painting or other costly maintenance.

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ASBESTOS-CEMENT PRESSURE PIPE

Exclusive, patented FLUID-TITE Coupling that's 5 years ahead—connects in only two steps without heavy machinery!

Streamline installation . . . reduce costs and time . . . with modern "K&M" Asbestos-Cement Pressure Pipe.

To connect pipe to coupling, just lubricate the rubber gasket—and slide the pipe in! You can lay more pipe per hour than ever before, and do it under all weather and soil conditions—even in water and muddy trenches.

But, that's not all.

Tough, hardy "K&M" Asbestos-Cement Pressure Pipe is a miser concerning maintenance. It firmly holds down pumping costs, and sends maintenance costs tumbling. This durable-as-stone pipe won't corrode or tuberculate, and is completely immune to electrolysis. Permanently sealed joints remain water-tight always.

That's why communities from coast to coast have discovered that the low initial cost of top-quality "K&M" Asbestos-Cement Pressure Pipe is often the last cost.

What makes "K&M" Asbestos-Cement Pressure Pipe so special? Eighty-five years of asbestos engineering by one of America's pioneers in asbestos products. Put this wealth of experience to work for you. Write to us today.

The finest coupling in the industry! Exclusive, patented "K&M" FLUID-TITE Coupling connects in two easy steps. Seals tight and stays tight . . . no matter how high the pressure climbs. Rubber sealing gaskets are self-energizing. No cumbersome coupling puller is required. And, a 5° deflection per coupling, if you need it.

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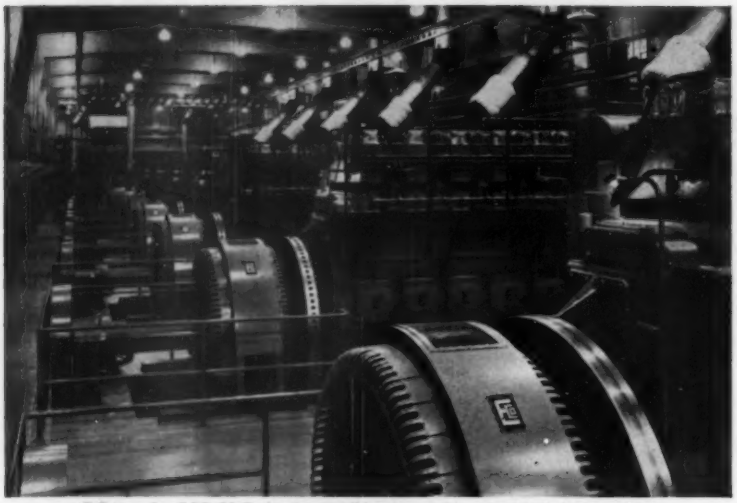
Behind Our Air Power And The SAGE System



7 Enterprise DSQ-38 Turbocharged Diesels provide completely independent power at "joint center" SAGE system power plant, McChord AFB, Wash.

...Electric Power by ENTERPRISE

This is one of the vital SAGE* system plants powered by Enterprise. In all, 25 Enterprise Engines provide some 44,000 HP, or 31,000 KW of power required to operate four of the complex SAGE network centers.

SAGE is the giant cyclops eye that will survey the skies far beyond our borders in a continuous search for aerial invaders. It's automatic. Electronic equipment can assemble and correlate information on air activity from a vast number of sources, describe the air situation, and direct interceptor aircraft and pilotless missiles to the target—all in a matter of seconds.

The need for totally dependable, uninterruptable electric power to operate computing and other equipment is obvious. Without it, SAGE just couldn't function. Our air defense system would be useless. That's why Enterprise Engines, both straight diesel and dual fuel types, have been installed in many of these critical centers. They meet rigid Air Force requirements—rewarding testimony to their real value.

No power plant should settle for less than Enterprise quality, long the choice of power experts. Get full information on models from 73 to 7703 HP in diesel, dual fuel, tri-fuel and spark ignited gas engines.

*Semi-Automatic Ground Environment

DEPENDABLE ENGINES

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Military flame thrower fails to damage

USS Cyclone Steel Fence!

To test the fire and heat resistance of USS Cyclone Steel Fence, the lethal fury of an Infantry flame thrower was turned against a panel of Cyclone Chain Link fabric. The result? The fence fabric was completely undamaged. If this had been an actual installation the fence would have been just as serviceable, just as strong and good-looking as before.

You are not very apt to turn a flame thrower against the fence installed around your municipal projects. But fire could accidentally break out, a workman could start a trash fire too close to the fence. Wouldn't you feel better knowing that the fence that encloses your water works, sewage plant or park was USS Cyclone Steel Fence . . . the fence that has proved that it can stand up under adverse conditions?

Before you buy fence again find out more about the fire and impact resistance of USS Cyclone Steel Fence. Just send in the coupon and we'll give you complete information on this quality fence.

USS and Cyclone are registered trademarks

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SERVICE CLAMPS

fast, permanent connections to any main

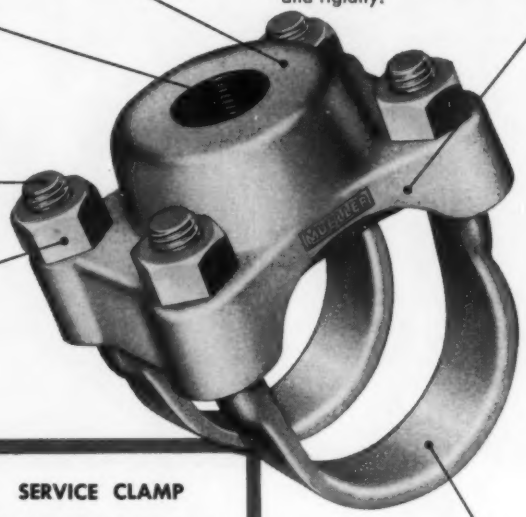
Entire body heavily galvanized for maximum resistance to corrosion.

Tough, malleable iron body accurately fits contour of pipe and gives maximum strength and rigidity.

Full length threads, precision machined in thick body boss, assure solid, leak-proof connections.

Unusually large cross sectional area provides maximum strength during installation. Even the smallest clamp has a ⅝" diameter strap because this is the smallest size bolt that cannot be broken by a normal individual in normal use.

Rolled steel, cadmium plated nuts accurately machined to give solid, permanent connection without re-tightening. National Standard threads give maximum strength by assuring precise fit.



Neoprene gasket, recessed into body, is not affected by water and gives positive, easily-made seal. Regularly furnished, neoprene gasket is cemented in place for ease of installation. Lead ring gasket also available.

SERVICE CLAMP

Mueller or Iron Pipe thread tapping.

Tapping sizes from ½" through 2".

Pipe sizes from 1" through 12".

Single or double strap type.

Heavy cadmium plating on strap and threads gives maximum resistance to corrosion.

Forged steel straps, accurately curved to fit pipe, are as wide and flat as practicable to give maximum bearing and greater stability.

Flattened strap gives large contact area—increasing life of clamp by reducing effect of corrosion.

All Mueller Service Clamps now packed in labeled, corrugated cartons for ease in handling, shipping and storing.

These features are typical of the attention to detail in research, design and engineering that becomes a part of every Mueller product manufactured for the water industry. Write for complete information.

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Modern Water Rates PART IX

Fire Protection Charges

Their place in a water rate schedule

When a water rate has a fire-protection charge it asks payment for the added capital investment that must be made in order that the water works can serve safely for fire-fighting purposes. To keep the fire hoses full when needed, a water works must provide larger mains, fire hydrants, extra valves, install larger pumps and keep more water in storage than it generally would have to do to supply simply domestic, commercial, and industrial purposes.

Nevertheless, not all water works make these charges. Privately-owned water companies have an understandable interest in them. Autonomous water authorities or districts frequently make these charges but a water works owned and operated by a city government itself generally shows only casual interest.

When the water works is privately owned, it pays local taxes to the city. Moreover, it has to earn a dividend for its stockholders. For fire protection, the customer wants to be able to use instantly a large volume of water—although he hopes earnestly that he never will need it. Thus, the volume of water passing through a fire hose does not measure fairly the protection provided. The private company must invest in larger mains and pumps able to deliver this water. This investment rightfully should earn enough to pay taxes and realize a dividend. Fire service charges are designed to make this possible.

However, when the water works is municipally-owned, it does not pay taxes and generally does not earn dividends. Thus, the freedom from these financial responsibilities roughly corresponds to the fire-service charge. Since the water user and the taxpayer are the same, most cities prefer not to complicate their rates with these charges.

Nevertheless, when a municipally-owned water system serves areas outside the city limit, it certainly should invoke these charges. The water-rate schedule does not earn enough to pay for the added investment for fire protection, particularly when the water user does not pay taxes to the local government owning the system.

Cities also assess these charges against certain industries or others who want fire service over and above that normally supplied by the municipality. These plants may want a special line reserved strictly for fire fighting; they may want fire hydrants within their plant property; they may install automatic sprinklers within the building and want to be assured that water will be available. When the suppiying of water involves extra capital investments, then the city rightfully should make a charge that reflects this investment.

The basic problem in assessing these charges is to determine the value of the water works property that has to be devoted to this service. The most accurate way of doing this is to go through the system and establish its value, estimating how much of each portion can justifiably be charged against fire protection.

It is possible for one to charge hydrants and certain valves exclusively to fire service. Meters and service taps, for example, should be charged completely to domestic service. Other items, such as standpipes, reservoirs, pumping equipment, mains should be charged partly to fire protection and partly to other duties.

A number of formulae exist that are sometimes used to determine the estimated portion of the total cost that is dedicated to fire protection. One of the oldest of these is the Metcalf, Kuchling and Hawley formula originally presented in the *Proceedings of the American Water Works Association*, p. 87, 1911. This reads as follows:

$$Y = \frac{147}{X^{0.37}} - 12.1$$

in which X represents the population and Y the fire-protection percentage.

The difficulty is that such for-

(*Advertisement*)

NEW CAST IRON PRESSURE PIPE PLANT FOR PLAINS STATES

Council Bluffs Location

COUNCIL BLUFFS. Geographically located in the heart of the Plains States, the new pipe foundry of the Griffin Pipe Division, Griffin Wheel Company, is nearing completion at Council Bluffs, Iowa, reports Sam Prest, Vice President and General Manager. Shipments will reach their destinations in record time, because the site is served by eight major railroad carriers alone, in addition to truck carriers.

SAM PREST
Vice President

Economical 20-Ft. Length

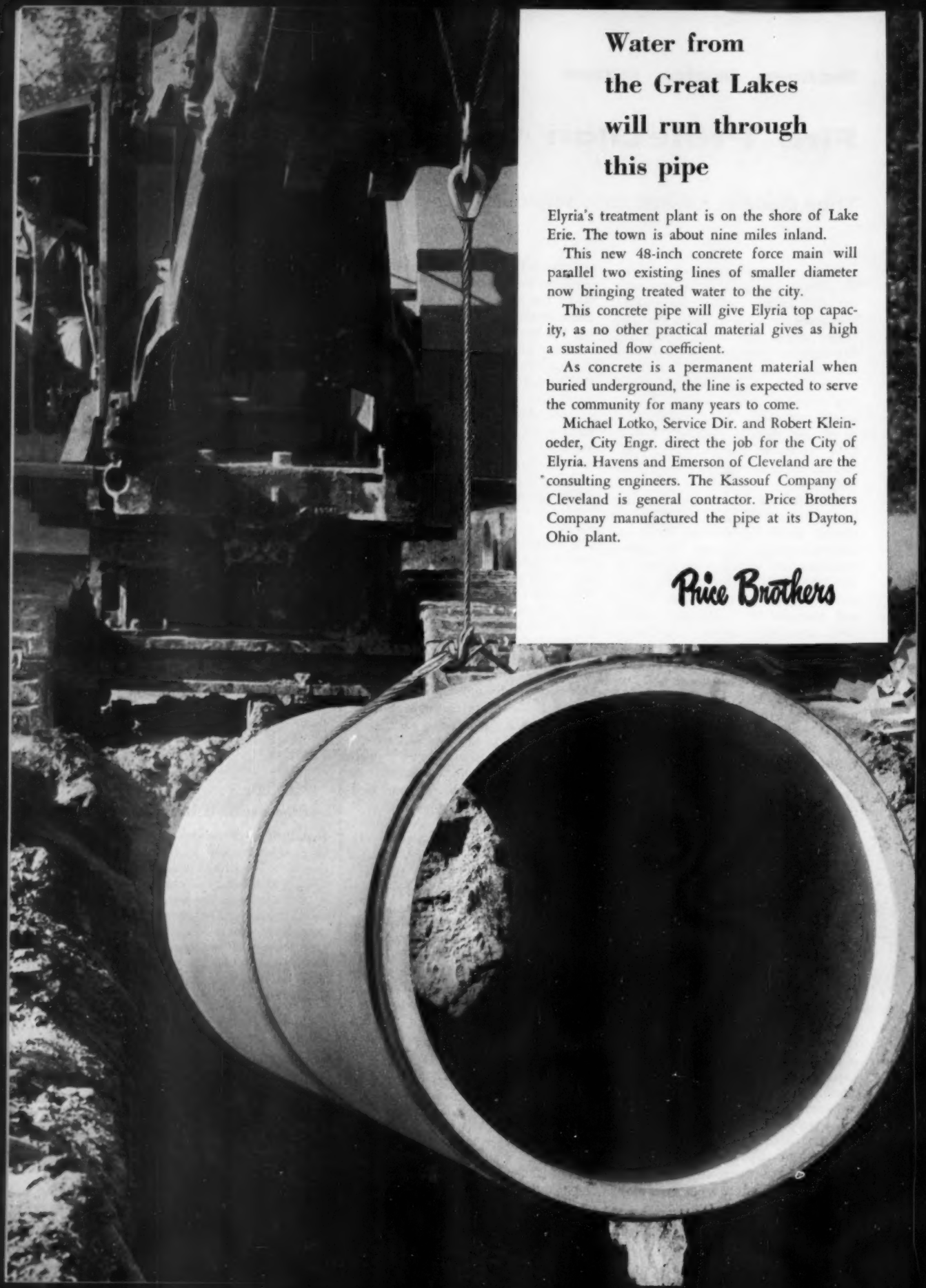
Pipe in 4- to 12-inch diameter sizes will be manufactured in accordance with American Standards Association, American Water Works Association, and Federal Specifications for water and gas distribution. The Griffin-20 trademark will apply to all pipe, which will be manufactured in modern 20-foot lengths. Griffin-20 pipe decreases the number of joints by 10 percent, as compared to conventional 18-foot lengths, with resultant savings in handling and installation.

Pipe Available March, 1960

Installation of production facilities is proceeding on schedule, and is due to be completed in a few months. Modern automated machines will produce pipe by the Delavaud process of centrifugal casting in permanent water-cooled molds. Griffin-20 pipe joints will include slip-on, mechanical, and bell and plain end, and will be available for March, 1960 deliveries.

Operating 8 Foundries in Midwest

Founded in 1877, Griffin operates 8 iron and steel foundries in the Midwest, two foundries on the west coast, and two in Canada. Also under construction is a new research center at Bensenville, Illinois. Griffin is a subsidiary of American Steel Foundries, which has 27 plants in 15 states and Canada.



Water from the Great Lakes will run through this pipe

Elyria's treatment plant is on the shore of Lake Erie. The town is about nine miles inland.

This new 48-inch concrete force main will parallel two existing lines of smaller diameter now bringing treated water to the city.

This concrete pipe will give Elyria top capacity, as no other practical material gives as high a sustained flow coefficient.

As concrete is a permanent material when buried underground, the line is expected to serve the community for many years to come.

Michael Lotko, Service Dir. and Robert Kleinoeder, City Engr. direct the job for the City of Elyria. Havens and Emerson of Cleveland are the consulting engineers. The Kassouf Company of Cleveland is general contractor. Price Brothers Company manufactured the pipe at its Dayton, Ohio plant.

Price Brothers

mulae allot to the fire-protection feature an unrealistically large portion of the total. For example, in a city of 10,000 fire protection would have to pay 60% of the cost; a city of 30,000 would charge 40% of its costs to this service; a city of 100,000 would allot 25% of its costs.

When a water utility does make a charge for fire protection, it usually asks for an agreed amount per fire hydrant. Generally this will run from $10 to $50 per hydrant per year. In a few cases it may rise as high as $75 per hydrant.

This of course considers only one portion of the fire-protection feature. Since the mains also have to be larger, some will make a charge per inch-foot of main — in other words, per foot of main per inch of pipe diameter. The Passaic Valley, N. J. Water Commission makes an annual charge of $0.0068 per inch-foot of main and $10 per hydrant. The Summit, N. J. water company charges $0.002545 per inch-foot and $15 per hydrant.

Essential Features

These charges should earn enough to pay for the investment made to insure that enough water will be held in readiness to fight fires. These essential features stand out:

- **To determine the amount that a fire protection charge should raise, make a valuation study of the utility and determine how much must be earmarked for fire protection; do not depend on rule-of-thumb formulae.**
- **In general, the charge can be prorated fairly by a unit charge against each hydrant and a charge per inch-foot of main larger than, for example, 4 or 6 inches in diameter.**
- **An industry asking for special fire protection can be charged on the basis of the size of the fire line and the number of sprinkler heads.**

BELLOWS FALLS, VT.

Rates Per Annum

Cubic Feet	*Per 100 Cubic Feet*
All water	$ .17

Minimum Annual Charges

Meter Size (in inches)	*Charge*
For all meter sizes	$ 6.00

Typical Annual Costs

Gallons	*Cubic Feet*	*Charge*
36,000	4,800	$ 7.76
60,000	8,000	13.60
120,000	16,000	27.20

General Data

Population served		4,000
Miles of Mains		19
Services	*Number*	*% Metered*
Domestic	975	98
Commercial	25	100
Other	None	—
Supply—Pond		
Treatment—Chlorine and copper sulfate		
Pond Capacity	.217 million gals. when full	
Average demand	.75 mgd	

Remarks

1. User pays entire cost of new service lines.
2. The Bellows Falls Water Department provides the cost of new mains.
3. Both water and sewer services are operated by the water department, but no charge is made for sewer services.
4. Automatic billing equipment is not used.
5. Water rates were increased by 30% in May, 1957. Water use was not affected and further adjustment is not needed at present.
6. Bellows Falls makes no charge for fire protection.

LAWRENCE W. RAYMOND
Superintendent of Streets and Water
Bellows Falls Water Department
Bellows Falls, Vermont

CARLSBAD, N. M.

Rates Per Month

Gallons	*Per 1,000 Gallons*
First 3,000	(Min.) $3.00
Excess .. (Summer) .15 .. (Winter) .20	

Minimum Monthly Charges

Carlsbad Water & Sewer Department makes no minimum charges.

Typical Monthly Costs

Gallons	*Cubic Feet*	*Charge* Summer	Winter
3,000	400	(Min.) $3.00	(Min.) $3.00
5,000	667	$3.30	$3.40
10,000	1,333	$4.05	$4.40

General Data

Population served	28,600
Miles of mains	28,000
Services (100% metered):	7,106 all told
Supply—Wells	
Treatment—Chlorination	
Plant capacity	17 mgd
Average demand	7 mgd

Remarks

1. Utility provides service line to property only.
2. Utility provides at its own expense the cost of new mains.
3. Water and Sewer Department operates and bills for both water and sewer service charges.
4. Billing is done on IBM automatic equipment.
5. Water rates were increased this year. Water use was not affected.

FARRELL McLEAN
Superintendent
Water and Sewer Department
Carlsbad, New Mexico

CEDAR RAPIDS, IOWA

Rates Per Month

Cubic Feet	*Per 100 Cubic Feet*
First 500	$0.33
Next 2,500	.35
" 22,000	.26
" 75,000	.16
Excess	.13

Minimum Monthly Charges

Meter Size (in inches)	*Charge*
⅝	$1.65
¾	2.00
1	2.50
1¼	3.50
1½	4.50
2	6.50
3	13.00
4	20.00
6	26.00
8	40.00
10	52.00

Delinquent bills are subject to a 5% penalty.

Outside city limits rates are 50% additional.

Typical Monthly Costs

Gallons	*Cubic Feet*	*Charge*
3,000	400	(Min.) $1.65
5,000	667	2.40
10,000	1,333	4.54

General Data

Population served	85,000
Miles of mains	229
Services (100% metered):	
Domestic	23,144
Commercial and industrial	611
Supply—River	
Treatment—Coagulation, lime-soda softening, filtration, chlorination, fluoridation	
Plant capacity	24 mgd
Average demand	10 mgd

Remarks

1. Utility provides no part of service line.
2. Utility provides approximately 50% of the cost of new main extensions.
3. The City Water Works does not operate sewer services, but it bills for them along with the water bill.
4. National Cash Register equipment is used for automatic billing.
5. Water rates were increased by 30% in 1958. Water use was not affected. Further adjustment is not needed at present.
6. Cedar Rapids makes no fire protection charge.

GEORGE S. LEE
Superintendent
City Water Works
Cedar Rapids, Iowa

LOVINGTON, N. M.

Rates Per Month—Residential

Gallons	*Per 1,000 Gallons*
First 3,000	Minimum
Next 2,000	$0.40
" 5,000	.30
" 15,000	.25
Excess	.20

Rates Per Month—Commercial

Gallons	*Per 1,000 Gallons*
First 5,000	Minimum
Next 4,000	$0.40
" 5,800	.30
" 15,000	.25
Excess	.20

Minimum Monthly Charges

Meter Size (in inches)	*Charge*
For all sizes residential	$3.00
For all sizes commercial	5.00

Typical Monthly Costs

Gallons	*Cubic Feet*	*Charge*
3,000	400	(Min.) $3.00
5,000	667	3.80
10,000	1,333	5.30

General Data

Population served		11,000
Miles of mains		30
Services	*Number*	*% Metered*
Domestic	2,288	100
Commercial	250	100
Other	None	—
Supply—Well		
Treatment—None		
Well capacity		4½ mgd
Average demand		2 mgd

Remarks

1. Service line is provided by the Utility Department of the City of Lovington to the property only.

(Continued on page 177)

BADGER'S COMPOUND WATER METER ASSURES FULL REVENUE FOR ALL WATER DELIVERED

Wherever water flow rates fluctuate considerably during the day — in schools, factories, hotels, theaters, apartment houses, dairies, laundries — Badger's compound meter assures economical, efficient service.

This compound meter combines Badger's disc and turbine meters to provide accurate registration at all rates of flow. You get the full revenue to which your water department is entitled for water actually delivered.

It is the industry's only compound meter where only one side operates at a time. A patented balanced compounding valve directs small streams through the disc meter, large streams through the turbine side... for accurate measurement of all rates of flow, less wear and longer service life.

Write for complete details now.

Badger Water Meters

BADGER METER MFG. CO. • 4545 W. Brown Deer Rd. • Milwaukee 18, Wisconsin • *Offices in principal cities*

2. The Utility Department provides the cost of new mains.
3. The Utility Department operates both water and sewer services and bills for both.
4. Billing is done on a Burroughs Sensimatic Series 300 machine.
5. Water rates were increased by 25% in 1951. Water use was not affected, and no further adjustment is needed.

MERLE A. KINDEL
Water & Sewer Superintendent
Utility Department
Lovington, New Mexico

LUBBOCK, TEX.

Rates Per month

Gallons			*Per 1,000 Gallons*
First	3,000	(Min.)	$2.40
Next	2,000		.40
"	5,000		.35
"	40,000		.30
"	200,000		.28
Excess			.25

Because of a recent annexation program there are no outside-city services, and hence no outside-city rates.

Minimum Monthly Charges

For all meter sizes $2.40

Typical Monthly Costs

Gallons	*Cubic Feet*	*Charge*
3,000	400	(Min.) $2.40
5,000	667	3.20
10,000	1,333	4.95

General Data

Population served 140,000
Miles of mains 350

Services	*Number*	*% Metered*
Domestic	25,669	100
Commercial	2,300	100
Industrial	250	100

Supply—Wells
Treatment—Liquid chlorine
Plant capacity ..... 46 mgd
Average demand ..... 17½ mgd

Remarks

1 The utility provides service lines to property only.
2. Customer pays for main extensions on a front foot basis of $2.25 per front foot. If the utility must extend mains past other properties in order to reach the customer applying for main extensions, the customer requesting extension must pay entire cost of extension. The customer is later refunded cost of main extension past intervening properties when said properties are connected to main and owners of same pay front foot assessment.
3. The Lubbock Water & Street Department operates both water and sewer services. There is no separate charge for sewer services.
4. IBM automatic equipment is used in billing.
5. Water rates were increased by 33⅓% in May, 1958. Water use was not affected. No further adjustment is needed.
6. There are no charges for fire protection

JOEL LOCKE
Street and Water Department
Lubbock, Texas

NORFOLK, VA.

Rates Per Quarter

Cubic Feet		*Per 100 Cubic Feet In City*	*Outside*
First	40,000	$0.27	$0.54
Next	9,960,000	.16¼	.16¼

Consumers whose total consumption of water is over ten million cubic feet per quarter shall pay 27c per hundred for the first 40,000 cubic feet, 16¼c per hundred for the next 120,000 cubic feet, 13½c per hundred for the next 3,440,000 cubic feet, and 13¼c per hundred cubic feet for all water in excess of 3,600,000 cubic feet.

Minimum Quarterly Charges

For all meter sizes in city $1.00
For all meter sizes outside city $2.00

Service Charges

In addition to the charge for actual water consumption, the customer pays the following service charge per quarter:

Meter Size (in inches)	*Charge*
⅝	$ 2.15
¾	2.90
1	5.75
1½	13.00
2	18.00
3	36.00
4	65.00
6	144.00
8	288.00
10	454.00
12	648.00

Flat Rates

Consumers using water where meters have not been installed shall pay the following flat rate charges:

First faucet	$18.00	per annum
First toilet	4.35	" "
Each additional toilet	1.45	" "
First bathtub	4.35	" "
Each additional bathtub	1.45	" "
Each hose connection	8.65	" "
Each washstand	1.45	" "
Each laundry tub	4.35	" "

Consumers outside city limits pay twice the above amounts.

Industrial Rates

The city manager is authorized to sell untreated water to industrial takers at the following rates:

Cubic Feet	*Per 100 Cubic Feet*
First 533,333	$0.12½
Next 533,333	.11
Excess	.09

Typical Quarterly Costs

Gallons	*Cubic Feet*	*Charge In City*	*Outside*
9,000	1,200	$ 3.24	$ 6.48
15,000	2,000	5.40	10.80
30,000	4,000	10.80	21.60

General Data

Population served 367,700
Miles of mains 771
Services:
Total of 65,687, 97% of which are metered.
Supply—Surface
Treatment — Prechlorination, flocculation, sedimentation, filtration, correction for corrosion, fluoridation and sterilization.

(Continued on page 178)

WHAT DO I NEED FOR A GOOD SEWER CLEANING PROGRAM?
BUCKET MACHINE
NEW MODEL ON DISPLAY
PUBLIC WORKS CONGRESS AND EQUIPMENT SHOW
Seattle . . . September 20-23
IN CHARGE OF SEWER PROBLEMS
POWER RODDER
NEW ROD ACCESSORIES
NEW BUCKET MACHINE ACCESSORIES
. . . EXPERT COUNSELING . . .
OUR REPRESENTATIVES WELCOME AN OPPORTUNITY TO HELP YOU SOLVE YOUR SEWER CLEANING PROBLEMS
CHAMPION CORPORATION
HAMMOND, INDIANA

ARE YOU PROTECTED FROM GAS LEAKAGE IN "HIGH HAZARD" AREAS?

COMPLETE SAFETY SURVEY PROVIDED BY HEATH SURVEY CONSULTANTS, INC.

The "W" Type Survey consists of two phases, a thorough inspection of the mains and services in conjunction with an inspection of public and commercial buildings. During the inspection of downtown-commercial area streets, a pattern bar test is conducted by which the mains and services are completely checked. This pattern bar test was developed to eliminate the need for closely spaced and expensive hole drilling in the streets, yet it provides maximum SAFETY and thorough coverage. A leak progression map is also provided for this phase of the survey to provide an up-to-date and useful picture of conditions as they exist. Such a map is valuable for many reasons and particularly for a leak repair and replacement program since areas of extensive leakage and poor pipe are indicated visually. The map is brought up to date each year during the "W" Type Survey.

The building phase of the "W" Type Survey consists of an inspection of all public and commercial buildings including churches, schools, theatres and hotels which are individually inspected. Service lines are tested on both sides of foundations and meter sets are included. A negative or positive leakage report is provided for each building. Each leakage condition is classified as to its size and SAFETY importance, and a report showing all leak locations is furnished the gas company daily — this applies to both the street and building phases of the survey.

▶ Pinpointing Plus Classification ◀

These two important aspects of the "W" Type Survey are particularly valuable to gas companies from an economy and SAFETY point of view. Pinpointing of the leaks will save considerable time and money in the repair of leaks, allowing for more repairs to be made in a shorter amount of time and utilizing the repair crews in the most efficient manner. Classification of leakage, a system developed through many years of survey experience allows for the repair of leaks in the order of importance, again making for an efficient, effective and economical program of leak repair. By utilizing the classifications on leak reports, hazardous situations can be attended to first, followed by repair of the less critical leaks in order of their importance. This means fewer emergency calls, night work and headaches, and a much SAFER system.

▶ Repair & Insurance Benefits ◀

Many gas companies have proved that the "W" Type Heath Leakage Control Survey simplifies and greatly reduces the cost of normal repair and maintenance operations. Because the Heath Survey is an audit made by an independent 3rd party, it is of considerable value to claims and insurance departments. Several innovations developed by the firm are now used to make the survey more accurate than heretofore possible. One of these is the "Auto-Test-Insert" ("A-T-I" Unit) which is inserted in pavements to provide a permanent method for testing sub-surface atmosphere samples without leaving the motor vehicle.

For information about "W" Type Heath Leakage Control Surveys and a preliminary inspection of your property at no obligation, write to:

HEATH SURVEY CONSULTANTS, INC.
574 Washington Street, Wellesley 81, Massachusetts

THE SAFETY SERVICE THAT SAVES GAS

Plant capacity	48 mgd
Average demand	42 mgd

Remarks

1. Utility provides service line to property only.
2. For main extensions in new subdivisions in the city, the utility pays the difference in cost between the mains necessary to service the subdivision and the cost of trunk mains to extend service beyond the subdivision.
3. The Division of Water Supply of Norfolk has nothing to do with sewer services or charges.
4. Automatic billing equipment is not used.
5. Water rates were increased by approximately 20% in January of this year. Water use was not affected and no further adjustment is needed at present.
6. No fire protection water charge is made.

R. W. FITZGERALD
Superintendent
Division of Water Supply
Norfolk, Va.

PORT HURON, MICH.

Rates Per Quarter

Cubic Feet		*Per 100 Cubic Feet*
First	4,000	$0.074
Next	36,000	.062
"	40,000	.05
"	80,000	.04
Excess		.025

For metered users outside the city the above rates are increased by 50%.

Minimum Quarterly Charges

For all meter sizes in the city	$3.00
For all meter sizes outside the city	$6.00

Quarterly Meter Service Charge

In addition to the charge for actual water consumption, the customer pays the following service charge:

Meter Size (in inches)	*Charge*
⅝	$ 0.90
¾	1.35
1	2.55
1½	4.95
2	6.60
3	9.90
4	14.85
6	23.10
8	33.00
10	49.50
12	66.00

Outside city, 50% additional.

Flat Rates

For non-metered users, the following rates are charged on an annual basis:

Base rate	$6.25
Lawn sprinkling charge	2.00
Plus:	
Each person over 4	.65
First toilet	3.15
Each additional toilet	1.25
First tub or shower	3.15
Each additional tub or shower	1.25
First wash basin	1.25
Each additional basin	.65
Garbage disposal unit	3.00
Special garden rate (seasonal)	3.00

Services outside the city are 50% additional.

Typical Quarterly Costs

Gallons	*Cubic Feet*	*Charge In City*	*Outside*
9,000	1,200	$3.00 (Min.)	$6.00
15,000	2,000	"	"
30,000	4,000	$3.86	"

General Data

Population served	In city	38,250
	Outside city	3,840
Miles of mains	In city	133.5
	Outside city	17.1

Services	*Number*	*% Metered*
Domestic	1,214	9.3
Commercial	550	100
Other	57	100

Supply—St. Clair River
Treatment—None

Plant Capacity	36 mgd
Average demand	10 mgd

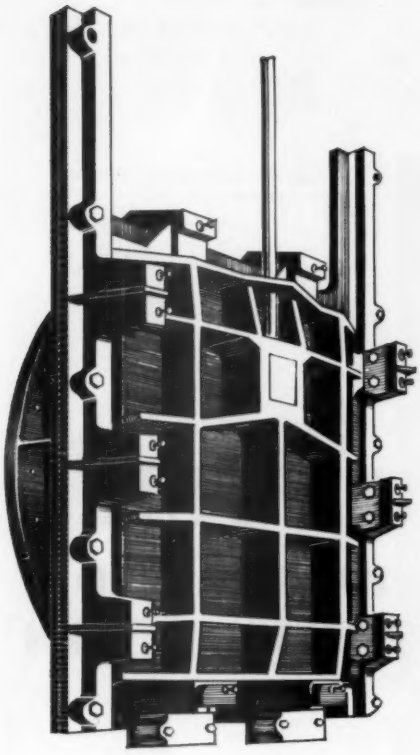
Remarks

1. The city provides service lines from main to curb box, which is located five

(Continued on page 181)

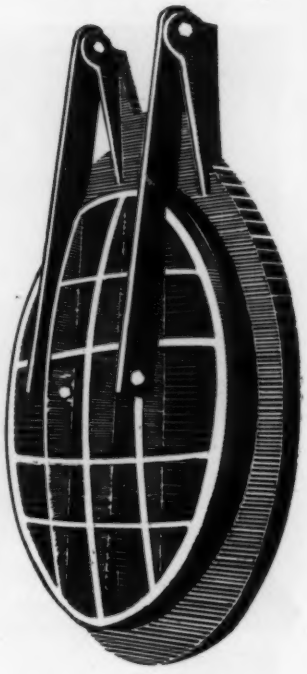
New steels are born at Armco

There's an Armco Gate to meet *Your* Needs



World's most complete range of *SLUICE GATES*

...and *FLAP GATES*



PLUS

a complete line of roller and radial gates, light duty slide and turn-out gates, and meter gates. Send for the Armco Gate Catalog. If you have a specific job in mind, check box in the coupon and our representative will call. Armco Drainage & Metal Products, Inc., 7679 Curtis Street, Middletown, Ohio.

ARMCO DRAINAGE & METAL PRODUCTS, INC.
7679 Curtis Street, Middletown, Ohio

☐ Send descriptive literature.

☐ Please have representative call.

Name_____ Title_____

Company_____

Street_____

City_____ Zone_____ State_____

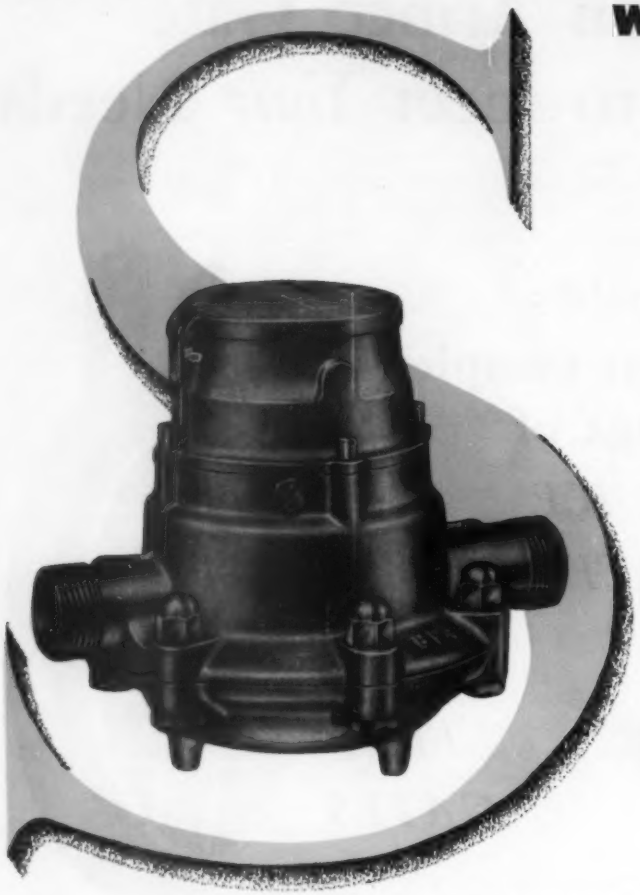
ARMCO DRAINAGE & METAL PRODUCTS

Subsidiary of ARMCO STEEL CORPORATION

OTHER SUBSIDIARIES AND DIVISIONS: Armco Division • Sheffield Division • The National Supply Company
The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

AMERICAN METERS

HAVE WHAT THE WATER SUPERINTENDENT WANTS



SERVICE • BY TRAINED EXPERIENCED MEN

AMERICAN Meter with Sealed Metal Register Box.

AMERICAN METER representatives are factory trained and have had long experience in Water Works operations. They are thoroughly prepared to render help to the Water Superintendent in problems of meter selection and also to the Meter Repair Department in showing repair men how to service AMERICAN METERS. Because they have attended specialized training courses at the factory they are able to demonstrate time-saving methods that reduce costs and insure maximum meter accuracy.

Behind these trained representatives are the factory engineers — ready to give expert help wherever needed. Yes, AMERICAN METER representatives have what the Water Superintendent wants in service backed by experience.

AMERICAN Meter representatives talk the shop man's language.

BUFFALO METER COMPANY
INCORPORATED

2902 Main Street
Buffalo, New York

feet from the sidewalk on the street side of the sidewalk.

2. The city provides the cost of new main extensions.

3. The Port Huron Public Works Department operates both water and sewer services. A sewer service charge is made with the water bill, in the amount of 100% of the water bill, less sprinkling charge.

4. Automatic billing is not used.

5. Water rates were increased by approximately 15% in July, 1959. Water use was not affected. Further adjustment is not needed at present.

ALLAN T. CARLISLE, PE
City Engineer
Public Works Department
Port Huron, Michigan.

ST. ALBANS, VT.

Semiannual Rates

Cubic Feet	*Per 100 Cubic Feet In City*	*Outside*
First 10,000	$0.32	$0.48
Next 10,000	.25	.37½
Excess	.12	.12

Minimum Semiannual Charges

For	*Allowance*	*Charge*
All meter sizes in city	2,350 cu ft	$ 7.50
All meter sizes outside	2,350 cu ft	11.25

Typical Semiannual Costs

Gallons	*Cubic Feet*	*Charge In City*	*Outside*
18,000	2,400	$ 7.68	$11.44
30,000	4,000	12.80	19.20
60,000	8,000	25.60	38.40

General Data

Population served	9,000
Miles of mains	24
Services (100% *metered*):	
Domestic	1,800
Commercial	3
Supply—Reservoir and Lake Champlain	
Treatment—Chlorine, copper sulphate	
Plant capacity	4 mgd
Average demand	2 mgd

Remarks

1. The Water Department provides one-half the cost of service lines.
2. The Water Department provides the cost of new main extensions in city. Outside, user bears entire cost.
3. The Water Department neither operates nor bills for sewer services.
4. Billing is done on Burroughs billing equipment.
5. Water rates were increased in May 1957. Water use was not affected. A study is presently under way to determine if rates are adequate.
6. No fire protection charge is made except to a governmental unit outside the city.

JOHN M. SIMMONS
City Manager
City of St. Albans, Vt.

SMYRNA, DEL.

Rates Per Quarter

Gallons	*Per 1,000 Gallons*
First 10,000 (Min.)	$6.00
Next 20,000	.30
" 70,000	.20
Excess	.15

There is no special rate for outside-city users.

Minimum Quarterly Charges

For all meter sizes .....$6.00 per quarter

Non-metered water users are billed a flat rate of six dollars per quarter per family unit.

Typical Quarterly Costs

Gallons	*Cubic Feet*	*Charge*
9,000	1,200 (Min.)	$ 6.00
15,000	2,000	7.50
30,000	4,000	12.00

General Data

Population served	2,900
Miles of mains	10

Services	*Number*	*% Metered*
Domestic	800	2
Commercial	100	95
Industrial	10	90

Supply—Wells
Treatment—Aeration

Plant capacity	2 mgd
Average demand	.36 mgd

Remarks

1. The town provides no part of service line.
2. The town provides the cost of new main extensions.
3. Water and sewer services in Smyrna are not departmentalized. The town operates and bills for both utilities simultaneously. Sewer service charge is one-half the water bill.
4. Automatic billing equipment is not used.
5. Water rates were revised in January 1956, when the method of billing was changed from spigot count to a flat rate of $6.00 per quarter per family unit.
6. Smyrna makes no fire protection charge.

REX D. GILMORE
Town Manager
Smyrna, Del.

TUCSON, ARIZ.

Rates Per Month
(In City)

All water in excess of minimum..... $0.10 per 100 cubic feet

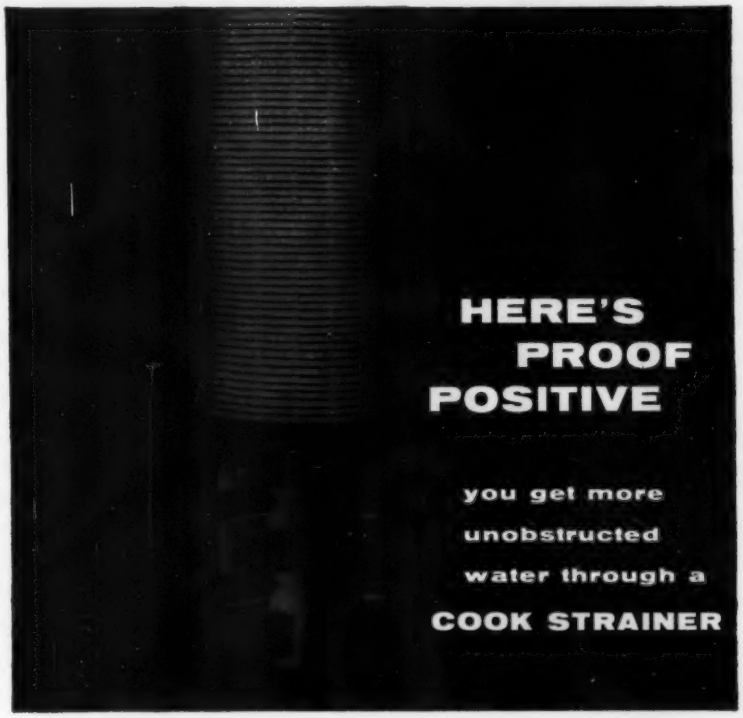
Minimum Monthly Charges
(In City)

Meter Size (in inches)	*Water Allowance (in cubic feet)*	*Charge*
¾	700	$ 1.75
1	900	2.00
1½	1,200	2.25
2 and over	1,400	2.50

Rates Per Month
(Outside City)

All water in excess of minimum:
$0.20 per 133 cubic feet (Area 1)
.25 per 133 cubic feet (Area 2)
.50 per 133 cubic feet (Area 3)

(Continued on page 183)



Cook's exclusive V-shaped slot construction permits the most direct water way from the water bearing strata to the well. This time-tested and proven design allows for maximum development of your well by removing silt, alluvium, clay, and fine sand from around the outside of the strainer, thus providing a natural filter of coarser and uniform sand and gravel.

Why not investigate all the advantages of Cook Strainers? They are available in Red Brass, Silicon Bronze, Armco Iron, or Stainless Steel; in as many different slot sizes as required. Eight to twenty-four hours delivery often possible by telephoning Cincinnati HUmboldt 1-8800.

COOK WELL STRAINER CO.
6330 Glenway Avenue • Cincinnati 11, Ohio
WORLD'S LEADING NAME IN WELL STRAINERS

NOW!

improved... streamlined... modernized...the

EDDY Hydrant

has ALL these features...

★ *Optional ground line break flange*
★ *Large diameter barrel for increased flow*
★ *O-ring or standard packing*
★ *New self-sealing rubber ring main valve packing*
★ *No lubrication required for fast, easy opening*
★ *Opens with the pressure—for instantaneous flow*
★ *Closes against the pressure—eliminates water hammer*

The EDDY Hydrant...improved... streamlined...modernized...retains all the basic advantages that have made these hydrants outstanding for four generations. Yet, it has important new advanced design features which provide the utmost in efficient, dependable, longlife fire protection service.

These new important advantages are provided without sacrificing interchangeability of working parts with EDDY hydrants now in service. Now, more than ever, EDDY offers maximum fire protection, economical maintenance and assurance against future obsolescence in your fire-fighting system.

Before buying or specifying hydrants, be sure you know how these advantages may benefit your community.

Optional break flange gives double protection against impact damage

NEW SAFETY FLANGE

NEW SAFETY COUPLING

EDDY VALVE COMPANY
A Subsidiary of James B. Clow & Sons, Inc.

WATERFORD NEW YORK

Minimum Monthly Charges
(Outside City)

Unit	Water Allowance (in cu.ft.)	Charge Area 1	Area 2	Area 3
Single unit	667	$3.00	$4.50	$4.50
Ea. add. unit	333	1.50	1.50	1.50
Each trailer space in add. to 1st unit	133	.60	.60	.60

Fire Protection

Hydrant rental in city ..... $24 per yr.
Hydrant rental outside city ... 36 per yr.

Automatic Sprinkler System

Size (in inches)	Annual Charge
3 or smaller	$30.00
4	36.00
6	54.00
8	72.00

Typical Monthly Costs

Cubic Feet	In City	Outside City Area 1	Area 2	Area 3
700	$1.77	$3.08	$4.62	$4.70
1,800	2.89	4.75	6.72	8.86
2,600	3.69	5.96	8.22	11.87

General Data

Population served 151,000
Miles of mains 685.6
Services: 37,500 domestic services, 100% metered
Supply—Wells
Treatment—Chlorination
Plant capacity ..... 74.5 mgd
Average demand ..... 23.2 mgd

Remarks

1. City provides service lines to the property only.
2. City bears cost of main extensions in new subdivisions within city limits.
3. No sewer service charges are made in Tucson.
4. Billing is done on manually operated National Cash Register machines.
5. Water rates were increased on September 18, 1952 by 11%.

PHIL J. MARTIN, JR.
Water System Manager
City of Tucson Waterworks
Plant and System
Tucson, Ariz.

Auto Industry Sees End of Exhaust-Smog Problem

The automotive industry has achieved a research breakdown in its five-year scientific search for practical ways to reduce engine exhaust emissions, according to Harry A. Williams, managing director of the Automobile Manufacturers Association.

Work on the problem now has moved from basic research to the engineering development and road-testing stage.

Five technical papers presented at the recent meeting of the Society of Automotive Engineers reported the progress in the cooperative study of motor vehicle exhaust problems carried out through the AMA's Vehicle Combustion Products Committee.

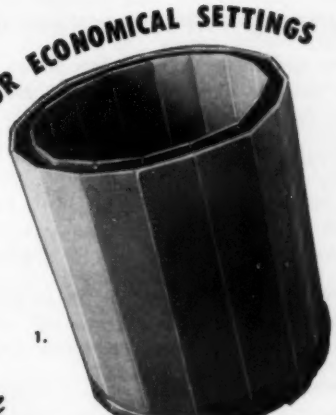
They disclosed that engineers have developed and tested three types of experimental exhaust treatment methods capable of making 60% to 90% reductions in hydrocarbon emissions under various test conditions.

The reports also pointed up serious operational shortcomings and complications that will require a great deal of additional study, testing and development before any of the methods could be made practical and dependable enough for commercial application.

Two of the methods, reported on in technical detail for the first time, have been developed into complete automobile exhaust system prototypes. These are a flame-type afterburner and low-temperature catalytic converter designed to oxidize or burn up hydrocarbon fumes. The third method is a high-temperature catalytic converter. All the devices have been tested on automobiles under operating conditions.

One of the main achievements reported in the papers is the development of two catalysts that will remove the undesirable emissions without breaking down under the lead present in modern automotive fuels. This has been a major obstacle to catalytic treatment of exhaust gas.

The low-temperature converter is so promising that the prototype model is being fabricated in sufficient quantity to permit simultaneous proving ground tests by all automobile manufacturers.



1. Large illustration shows Singl-use Fiberform ready to be filled.
2. Filling plate and collar simplify pouring concrete into form.
3. Completed meter box barrel.
4. Meter box with cover in place.

FOR ECONOMICAL SETTINGS

Make Your Own

CONCRETE METER BOX BARRELS *with*

FORD *Singl-use Fiberforms*

Water utilities that find vitrified or concrete tile expensive or difficult to obtain, may now make their own barrels for outside meter settings with Ford Singl-use Fiberforms which are inexpensive and easy to use. Forms made for 15", 18" and 20" ID barrels and in lengths of 15", 18" and 24". Use two for deep settings. Send for full information.

FOR BETTER WATER SERVICES **FORD**

THE FORD METER BOX COMPANY, INC. Wabash, Indiana

Heavy jobs like this are easy for the big new Cat No. 14 Motor Grader, working here on a section of Interstate Highway System near Corsicana, Texas. Owner: T. L. James & Co. Inc. and R. W. McKinney, Corsicana.

MOST VERSATILE BIG GRADER EVER DEVELOPED

—NEW 150 HP CAT TURBOCHARGED NO. 14!

The first and only Turbocharged Motor Grader, the big No. 14 delivers high production at low operating cost both on the roughest and finest grading work. It packs 150 HP and 29,280 lb. heft to handle heavy work quickly. Operates at the highest practical working speeds with either a 12-ft. or 14-ft. moldboard. You don't have to pick "spots" to make it pay off. You can use it profitably on many different applications such as:

—**power applications** like heavy grading, ditching, rough grading, bank sloping. Its low center of gravity provides extra blading and machine stability.

—**control applications** like light spreading, surface maintenance, fine grading and light blading. With Preco Automatic Blade Control, it controls blade slope within ⅛ in. in 10 ft.—cuts fine grading time in half.

Some of its many new features are shown here. All these and time-tested features combine to give you maximum return on every tax dollar invested. And remember, trade-in value on Cat machines is tops. For the complete story on the big, versatile No. 14, see your Caterpillar Dealer. Ask for a demonstration!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

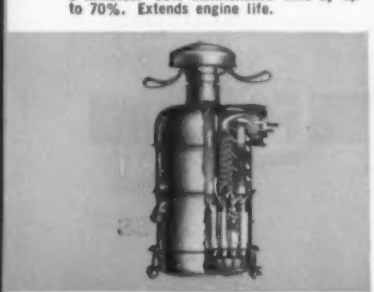
CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

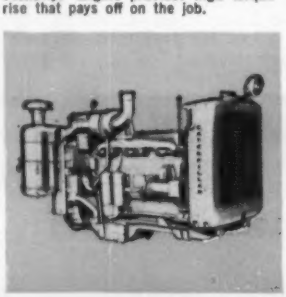
BIG NO. 14—
BORN OF RESEARCH
PROVED IN THE FIELD

PAYOFF FEATURES OF THE NEW NO. 14 — Plus exclusive oil clutch, power steering and power brakes, tubeless tires, extra strength frame, unequaled visibility and many other features.

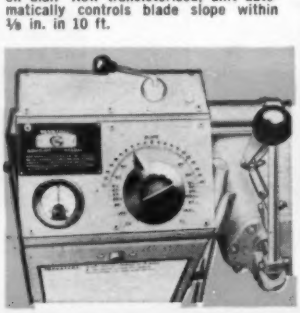
NEW DRY-TYPE AIR CLEANER. Removes 99.8% of all dirt from intake air during every service hour. Can be serviced in 5 minutes. Cuts maintenance time by up to 70%. Extends engine life.



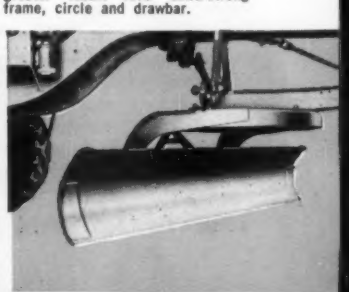
NEW TURBOCHARGED CAT ENGINE. Turbocharger utilizes waste energy from engine exhaust to increase efficiency and economy. Engine provides high torque rise that pays off on the job.

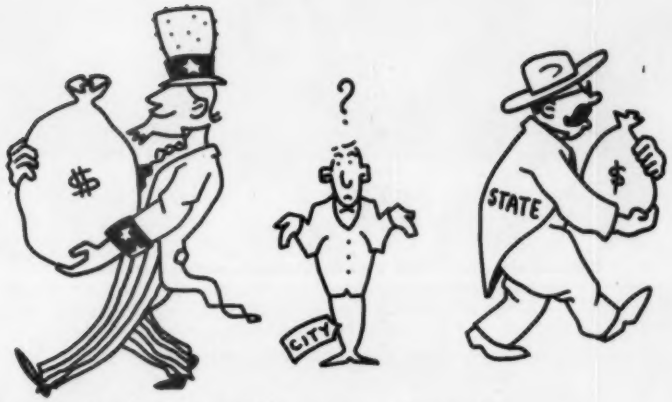


PRECO AUTOMATIC BLADE CONTROL. Optional. Operator selects desired slope on dial. Now transistorized, unit automatically controls blade slope within ⅛ in. in 10 ft.



HIGH THROAT CLEARANCE. New design permits increased clearance between moldboard and circle for greater loads. Also extra-strong frame, circle and drawbar.





State and Federal governments have preempted most of the tax revenue sources that cities might like to use.

Sewer Service Charges

How one calculates them—and why

By C. H. HOPER
C. H. Hoper & Company
Utilities Engineers
Denver, Colo.

Some 65 years ago, Brockton, Mass., adopted what apparently is the first sewer service charge. However, Brockton remained virtually alone until about World War II. Cities generally were not expanding rapidly. Sewage treatment was minimal and cities did not have to provide as many costly services as they do today.

Now matters are different. Cities generally are starved for *ad valorem* tax revenues as a direct result of the inflation since World War II. Costs of everything have skyrocketed. Intensifying this effect has been the desire and need for additional services, embracing everything from enlarged airport facilities to modern sewage treatment facilities. Moreover, state and federal governments have preempted most of the tax revenue sources that cities might like to use. With the *ad valorem* tax restricted, sometimes unfairly, by law, cities have *had* to follow Brockton's lead to pay the costs involved in an adequate sewerage program.

Even with federal assistance, cities themselves must pay the major cost of treatment plant construction. The sanitary sewer collection systems, in contrast, can be financed largely from special assessment or be built directly by subdivision developers, thus relieving these substantial demands on the badly overworked property tax.

All this indicates rather clearly that the use of sewer service charges is becoming of increasing interest to our nation's cities. The 1958 *Municipal Year Book* indicates that between 25% and 30% of those cities ranging from 10,000 to 250,000 now use this charge in some form.

No fixed schedule of sewer service charges will fit all cities. Nevertheless, certain common factors or characteristics will simplify the analysis necessary to make a fair rate schedule.

The first, of course, is the *capital cost*. This may vary greatly. Some collection systems require more pumping than others. Some combine storm and sanitary sewerage. Outfall facilities differ widely. The degree of purification also affects the total capital cost.

Second, we must consider *operation and maintenance costs*, which vary greatly with the type of sewage treatment employed.

The general public is understandably not happy if sewer service charges have to be raised every year or two.

Third, we should look at *management*. If water and sewer services are in the same department, this simplifies the administering, billing, and the collection of accounts. Statutes or charters may permit pledging water and sewer revenues. This may reduce debt service charges and interest rates.

Now we get to the *billing procedure*. This is rather closely related to the water billing procedure.

At this point, let's also discuss brifly *payments by non-users*. They should, of course, pay for installing the collection system, either by direct payment or by assessments levied against the property. To avoid *ad valorem* taxes in order to pay for main trunks, outfall and treatment facilities, a city can make a connection charge to be paid when properties connect to the system, in addition to the sewer service charges to users.

Although connection charges are not strictly a part of sewer service rates, they should be considered in connection with them. It could be considered unfair to ask the present users to pay for the additional trunk sewers, outfall and treatment facilities necessitated by extending the sewer system to serve new users. To defray the cost of these additional facilities, cities can, with propriety ask these new users for a connection charge in addition to the cost of the installation of the extension of the collection system.

Another factor that must be considered is the policy toward *exten-*

How To Increase Sewage Treatment Plant Capacity

The problem of providing overload relief for sewage treatment plants or increasing plant capacity is a major headache for thousands of American cities. Actually many cities have found an economical solution to the problem through the use of modern equipment that provides substantially increased plant capacity from existing structures. In other cities use of this equipment has materially reduced the cost of new or additional facilities.

Increasing Settling Tank Capacity

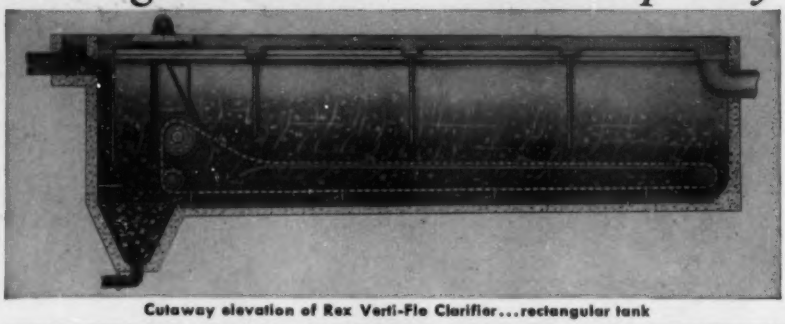
Through the use of a unique principle, the capacity of a conventional horizontal-flow settling tank can be at least doubled and assure a far clearer effluent. Called the Rex Verti-Flo, this unit transforms the conventional tank into a series of small, vertical-flow cells by use of a system of collecting troughs, adjustable weirs and partitioning baffles. Maximum weir length is provided by adjustable, V-notched weirs entirely around the periphery of each cell. Weir length is adjustable to control the flow in each cell so that the full tank's volume is utilized and short-circuiting within the tank minimized.

Verti-Flo can be installed in existing tanks with a minimum of structural alterations and assure at least double present capacity. In new tanks, Verti-Flo provides up to four times more capacity so that smaller sized basins can be used, assuring important cost savings on both construction and equipment costs.

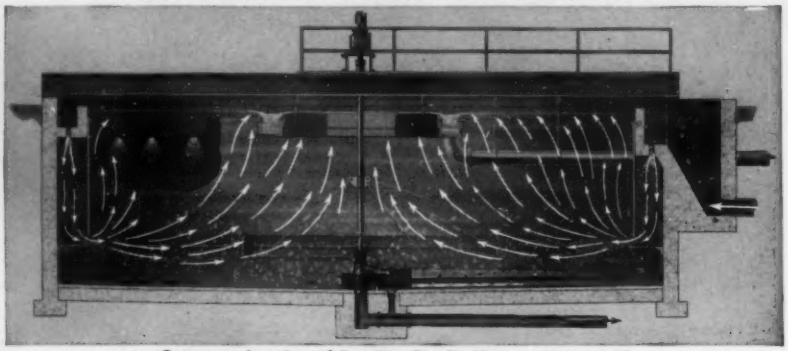
Increasing Capacity of Circular Clarifiers

A new hydraulic principle has made possible greatly increased capacity with loadings in excess of twice those of conventional settling tanks. This new clarifier, called the Rex Rim-Flo, provides maximum hydraulic efficiency, maximum use of tank volume, greatly increased capacity and simple scum removal. Influent is introduced into a feed channel entirely around the periphery of the tank. A series of ports in the feed channel directs the influent downward into the tank between the tank wall and a vertical skirt. Velocities of this flow are extremely low and it is properly diffused. There is no harmful tangential flow.

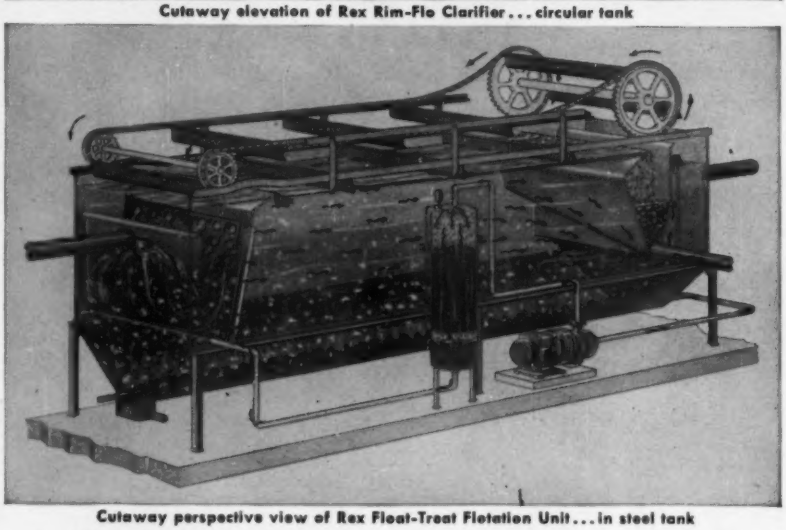
Solids promptly drop out of suspension onto the tank floor and the flow is directed gently upward to a central effluent trough. Short-circuiting is practically eliminated. Existing circular tanks can usually be modified to provide the advantages of Rim-Flo, assuring increased capacity at exceptionally low cost.



Cutaway elevation of Rex Verti-Flo Clarifier...rectangular tank



Cutaway elevation of Rex Rim-Flo Clarifier...circular tank



Cutaway perspective view of Rex Float-Treat Flotation Unit...in steel tank

Providing Overload Relief

In many sewage treatment plants, overload relief for existing facilities and greater flexibility of the complete system can be provided by the addition of a dissolved air flotation unit for separation and thickening. The Rex Float-Treat System is a process in which suspended organic matter or chemical floc is removed from the raw waste by flotation. Flotation is accomplished by introducing millions of tiny air bubbles into the process liquid. The bubbles attach themselves to particles in suspension and carry them to the surface for removal. This system can also be used for the combined purposes of separation and thickening in a single tank.

The speed with which the Rex Float-Treat System effects an efficient separation increases the efficiency and capacity of the entire plant...provides effective overload relief. Float-Treat can often be installed in existing concrete tanks for maximum economy.

For Complete Information

on how you can increase the capacity of your plant at minimum cost with these or other Rex equipment or processes, see your consulting engineer or write **CHAIN Belt Company,** 4648 W. Greenfield Ave., Milwaukee 1, Wisconsin, for informative literature.

non of service to users beyond the city's corporate limits. Cities may decide to extend sanitary sewer service in an effort to protect the health of their own citizens. However, this then becomes basically a utility operation, and a city justifiably should calculate costs on a utility basis, giving full consideration to the cost of the facilities used in the service of these out-of-city customers, also operating maintenance and depreciation costs, and interest costs on money invested. In addition, some cities collect a profit on their investment.

The over-all financial program should be carefully thought through, so that all revenue needs, including those for future debt retirement, are fully considered. The general public is understandably not happy if sewer service charges have to be raised every year or two.

Rate Structures

Unless sewer service charges are evolved purely to raise needed revenue these charges should reflect actual costs and these costs should be spread equitably among all users.

The ideal rate structure spreads all costs fairly among users, both small and large, and considers the character of use. A good rate provides extra charges to pay for costs of handling of unusual sewage.

The two principal service charge categories are *flat* and *metered.* Where the individual user of sewage service is furnished water on a flat or non-metered basis, or water meter readings are not available, as could be the case in separately managed systems, one must bill sewer service charges on a flat rate basis. Ordinarily where flat water rates are employed, they extend only to residential users. Although it is possible that there may be special circumstances which would warrant to the contrary, we think that sewer rates should be based upon metered water use where water meters are installed and especially where water and sewer departments are combined.

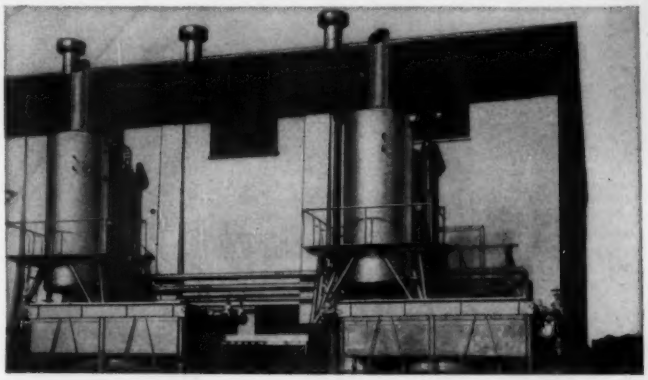
"Per Family" Units

Where flat rates are employed, they may be applied uniformly, be based upon inspection and counts of connections and fixtures, vary with the property served, or depend upon the size of water tap. For a number of years, we have used a "per family" basis in determining sanitary sewer charges where water is billed on flat rate schedules, and have found this much simpler to establish and enforce. Thus we have been able to eliminate the cost of expensive surveys to determine fixture counts. Rates should be as simple as possible and yet achieve the desired end results. Even where residential flat rates for water service are employed, water meters are usually available for determination of use by commercial and industrial users. We have never had to establish rates for sanitary sewer service where industrial water uses were not metered.

Metered rates for sewage service should normally be based upon water usage. Sewer meters are often installed for measuring sanitary sewage from the larger users and are particularly necessary in measuring sewage contributed, say, by a suburban area where individual water billing data are not available.

Percent of Water Bill

Normally, metered rates can either be based upon the water meter size, computed as a percentage of water bills, or on a



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separate schedule of use established. Basing charges upon the water meter size may be unfair where the water pressures vary widely, particularly as they do in hilly cities.

If sewer rates are tied to water bills, it would be a coincidence if costs are apportioned fairly between all users of water and sewage service. If it is desired to spread these costs fairly, it can best be done by a separate schedule of rates.

Basing sewer service charges on water use over each month may create a factor of unfairness during the lawn-sprinkling season. To correct this, some determine an annual sewer service cost based upon water use during the winter periods when no sprinkling is done.

Special Considerations

Rates also must provide for those users who obtain all or part of their water supply from private wells or other non-municipal sources. It is necessary in these instances to measure this water either regularly by separate meter or by periodic check to determine the proper sewer charges. Rates also should adjust for those whose metered water is used directly in manufacturing process or is discharged to other than the sanitary sewer system.

A problem in rate mechanics sometimes arises when revenue bonds are issued and there is little need for year-to-year expenditures for capital additions and improvements. Revenue bond buyers look for what is termed debt-service coverage. After all normal operating and maintenance costs have been met, for safety's sake there should be remaining more than an amount necessary merely to meet bond interest and retirement requirements.

If this excess is 50%, we have 150% debt service coverage. The excess may be used for capital additions on a pay-as-you-go basis or may be used to retire additional bonds. In our reference to bonds, we are thinking entirely of serial bonds with over-all terms well within the expected life of the improvements financed.

Industrial Wastes

There are a number of methods by which a city can equitably handle wastes materially different from those emanating from residences and commercial buildings and establishments. Some of these special users may be discharging sewage in periodic large amounts, taxing the capacity of the collection

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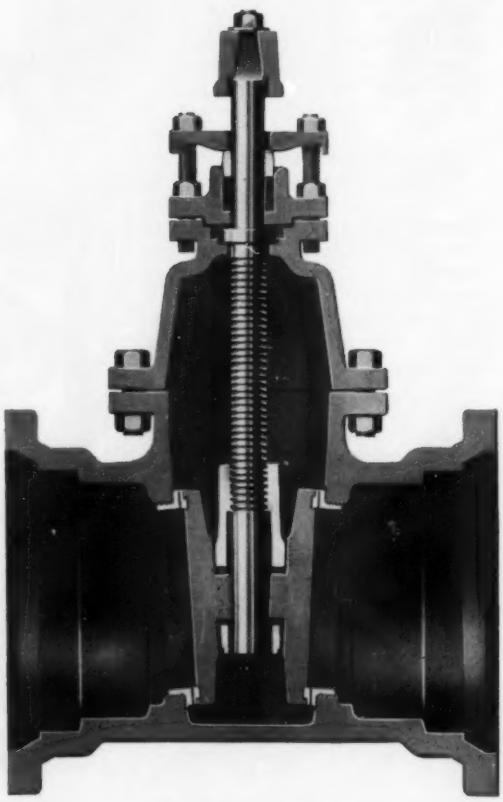

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system. Rather than exact higher rates from these users, they could be required to provide the necessary equalizing storage and the requirement of such storage when they are needed could be included in the provisions of the city's ordinances.

Deleterious Wastes

Other users may discharge materials such as plating wastes, paunch refuse from packing plants, hair, chicken feathers, or wastes which are either strongly acid or alkaline, etc. The city could require that these substances which are deleterious to its sewer system be removed from the sewage prior to its discharge to the system.

Various industries may deposit wastes which are not deleterious in the sense already mentioned but which involve additional treatment costs. We refer particularly to sewage of higher than normal BOD (biochemical oxygen demand) and/or settleable solids. There have been a number of formulae adopted by various sewer systems to reflect the additional costs in the charges for sewer service. We are not including any such formulae in this presentation as the effect upon costs would vary with the particular type of treatment involved. These costs would, of course, be quite different if, for instance, the sewage is conducted to lagoons or only given primary treatment. Any schedule of sewer service charges should provide for the computation of additional costs predicated upon the actual costs of the system as to capital, operation, and maintenance. No credit should be allowed where plain water is dumped into the sanitary sewer system since that problem is normally solved by proper water rates.

Proper administration of regulations regarding disposal of deleterious materials or charging for extra strength sewage requires periodic surveys and appropriate tests.

No discussion of sanitary sewer charges would be complete without at least mentioning billing procedures and collection charges. Billing for sewage service should, if possible, be combined with water billing and both collected as a single unit. Collection is customarily enforced by turning off the water service. Where statutes permit, unpaid bills may be collected by legal action against the property affected.

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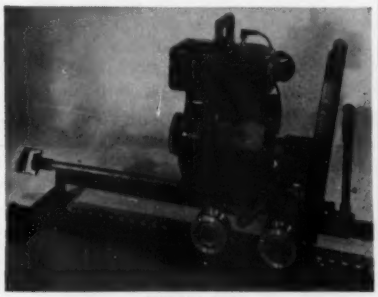

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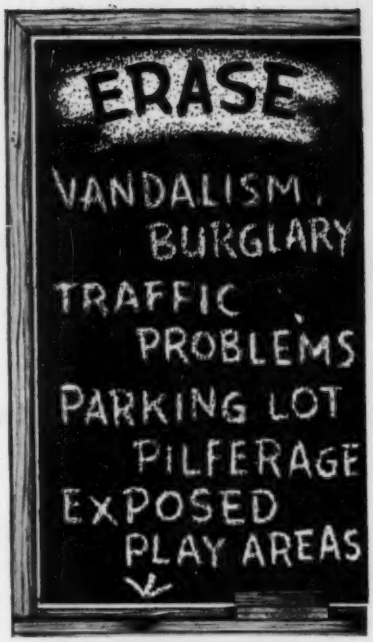

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ANNIVERSARIES. This September feature takes note of two anniversaries, the 50th for *The American City*, whose first issue was dated September 1909, and the 65th for the American Public Works Association, whose annual convention takes place from September 20th to 23rd in Seattle. Our stories, of municipal public relations applied to public works, are presented with anniversary congratulations to *The American City* and to APWA.

The City Tells Its Story

Edited by **PAN DODD EIMON**
Consultant, Municipal Public Relations

Fifty years ago there was very little PUBLIC RELATIONS in PUBLIC WORKS— Now it's a key to public works operations

Royal Oak's Refuse Services

"Fifty years ago," says Director G. L. Nampa, Department of Public Works, Royal Oak, Mich., "ours was a village of about 1,000 people with no public works department. Any public works activity was probably done by a team of horses with a dump wagon and a man or two with shovels attempting to make the sand trails passable. The degree of public relations depended on the help rendered by pulling a citizen's wagon from the mud."

In the 1920's, Royal Oak got a public works department. And, by 1949, City Manager E. M. Shafter was writing a letter to Royal Oak residents which began: "In order to maintain a dependable and uninterrupted garbage collection service in all sections of the city, it is quite essential that all residents fully cooperate in complying with present established procedures." A little stilted but courteous. And this letter was the beginning of many thou-

Cincinnati's Safety Inspection

"There was considerable grumbling and resentment in the early days of the municipal inspection lane," Arthur D. Bird, engineer-writer of Cincinnati's public works department says, "and it has required a superior job of selling to gain the present level of acceptance and appreciation which the 'lane' now enjoys."

Organized in January 1940, the Inspection Lane is a unit of the Municipal Garage under the Director of Public Works, W. C. Wichman. Every motor vehicle operating on the streets of Cincinnati must be inspected and approved by the lane every six months. In 1954, bicycles were added to the vehicles inspected and a special lane was constructed for them.

These public relations approaches have helped "sell" the lane: *monthly meetings* bring together inspectors, cashiers, foremen of the lane to discuss ways to better serve the public, win understanding and public good-will, and to hear PR talks by supervisors and outside experts; *public appearances* by the Inspection Lane Supervisor, before civic groups. These give him a chance to explain aims and operations of the lane and to hear citizen comment about it.

Notification by postcard, well in advance of the date a motorist's safety lane sticker will expire; *training for automobile dealers and servicemen* in the requirements of the safety lane (this has made both groups sympathetic to and appreciative of the requirements of the safety lane).

Safety lane representatives often work with factory representatives when a new car model has engineering changes which affect its safety lane status.

Reservations for fleets of trucks

New York City's Clean-Up

"A most remarkable transformation," *The New Yorker* magazine quotes a visiting Britisher on New York City's street clean-up. " . . . But the people themselves must have been transformed," he goes on to say, "they actually carry a newspaper or a bit of wrapping paper an extra thirty or forty feet to a basket before letting it drop."

Just how much cleaner New York is now than it was a few years ago is the subject of complete coverage in April 1959 (THE AMERICAN CITY, pp. 96-98). The public relations story behind the cleaner city goes back to 1948 when the *Office of Public Relations Advisor* was set up in the Department of Sanitation. It was conceived as "an information and educational agency" to supply a "long-felt need for a link between the department and the public it so intimately serves."

A few years later, 1955, the *Mayor's Interdepartmental Committee for a Clean City* was named. Its members: 28 heads of as many departments. Its job, as outlined by Mayor Robert Wagner: "to take appropriate and continuing action in an all-out fight against litter and litterbugs."

The same year, the *Citizens Committee to Keep New York City Clean* was formed. Privately financed, it coordinates its program with that of the Department of Sanitation, the PR advisor, and the mayor's committee. Of it, Sanitation Commissioner Paul Screvane says, "In my 22 years in this city's employ . . . never have I witnessed such an invaluable contribution to municipal cleanliness as has been made by the citizens' committee. . . ."

Among the ways these clean-up groups have informed and gotten help from 8,000,000 New Yorkers:

sands of letters, notices, folders from the department.

Those sections in city annual reports through which the public works department tells Royal Oak's 72,000 citizens how it operates and what help it needs from them are another successful PR technique.

Among the most successful, according to Director Nampa, have been these: a one-sheet *green-and-white folder,* distributed to every household in November 1958, on "Ways to Improve Your Refuse Service"; *red and yellow tags* by which trash collectors politely but firmly notify residents about improper containers and other violations; an *informal letter to business houses,* soliciting cooperation and urging, "if there is any question or problem concerning refuse service, please call us—you will help our department to render a better sanitation service to the whole city."

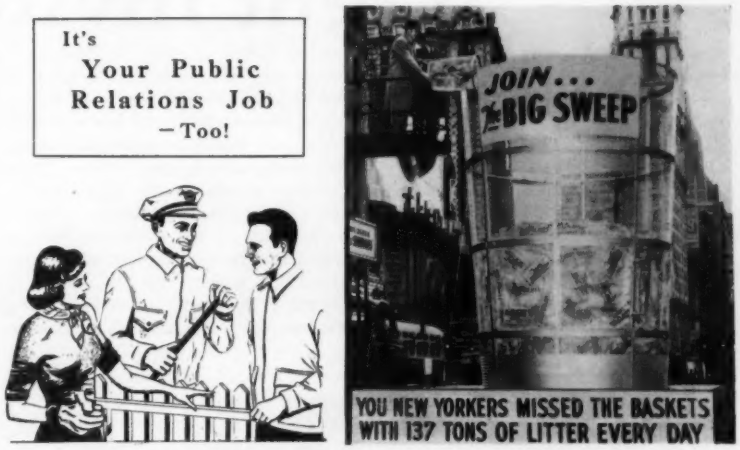
PR Tools to Win PW Friends

Royal Oak speeds refuse pickups (l) and informs householders about it (r).

and cars has a double-barrelled effect: it saves fleet owners time and money and prevents interference with normal inspection which would annoy individual car owners; *bicycle-testing* makes youngsters safety conscious and gives a special police officer a few minutes to talk safety to them; *hub-cap code marking,* newest public relations service of the lane, consists of putting a code number in an inconspicuous place on the rim of the disk. This number is recorded by the Inspection Lane, provides a means for police to trace stolen caps. The free service has received much public attention and has gained much public favor. The safety lane has earned popularity in Cincinnati.

Bicycle safety lane wins public favor for Cincinnati vehicle inspections.

use of mass media—Commissioner Screvane estimates that $4,000,000 in radio, television, newspaper publicity has been given the clean-up effort; *public displays* of sanitation equipment at City Hall Plaza, at bus and train terminals, in schools, offices, public halls; *literature*—millions of folders, letters, cards, digests of regulations have been distributed to all groups; *litter baskets* emphasized by a 20-foot giant cutout in Times Square, talking baskets on main thoroughfares, gold baskets awarded cooperating business houses; *neighborhood efforts*—clean-up brigades, vacant lot improvements, parades, rallies, contests, and public recognition for winners.



New York utilized employee booklet (l) and giant litter basket (r).

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CORNING GLASS WORKS

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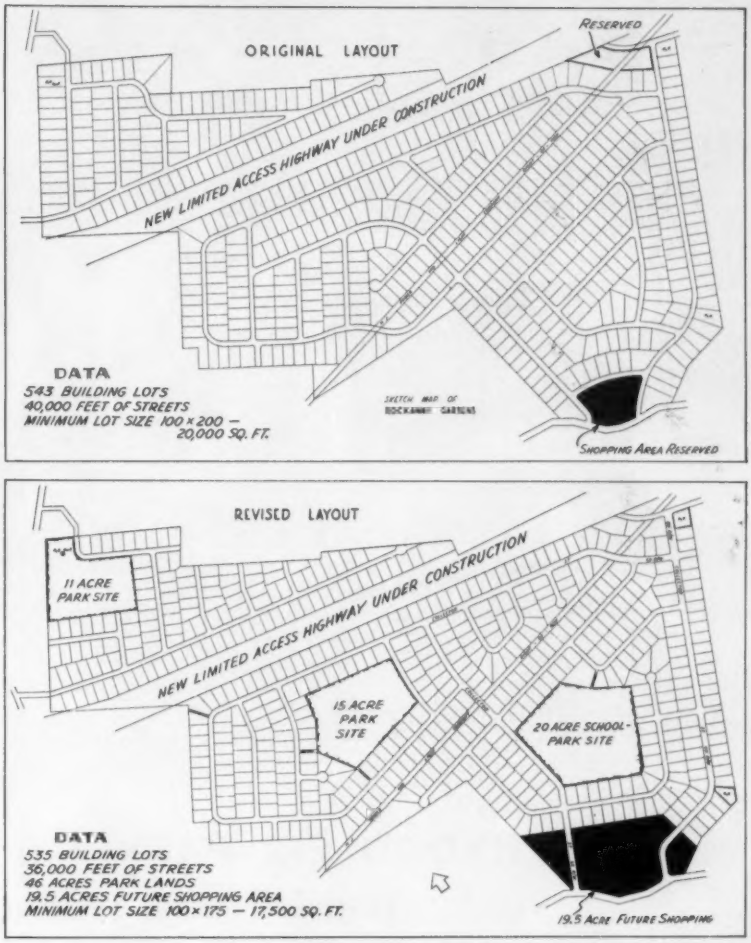
Density Control Zoning

. . . provides park lands, lowers costs to developer and governing body

By ROBERT CATLIN
Scott Bagby
and Robert Catlin
City Planning Consultants
Denville, N. J.


ORIGINAL LAYOUT
RESERVED
NEW LIMITED ACCESS HIGHWAY UNDER CONSTRUCTION
DATA
543 BUILDING LOTS
40,000 FEET OF STREETS
MINIMUM LOT SIZE 100 x 200 — 20,000 SQ. FT.
SHOPPING AREA RESERVED
REVISED LAYOUT
11 ACRE PARK SITE
NEW LIMITED ACCESS HIGHWAY UNDER CONSTRUCTION
15 ACRE PARK SITE
20 ACRE SCHOOL-PARK SITE
DATA
535 BUILDING LOTS
36,000 FEET OF STREETS
46 ACRES PARK LANDS
19.5 ACRES FUTURE SHOPPING AREA
MINIMUM LOT SIZE 100 x 175 — 17,500 SQ. FT.
19.5 Acre Future Shopping

The original layout of this subdivision provided 543 lots, each 100 feet wide and 200 feet deep or larger. The revised layout provides 535 lots. The minimum width is still 100 feet but depth requirements have been reduced slightly to make room for school and park sites.

Many municipalities have adopted density control zoning to prevent the overcrowding of land. Density control zoning requires a minimum lot area per dwelling or permits a maximum number of family units per area. It is designed to guide the inevitable suburban growth into compact service areas that can be most economically served with municipal facilities.

A new technique in the application of density control zoning can preserve open space or provide public parks, particularly in new subdivision developments that are literally changing the face of the countryside. Rockaway Township, N. J., has used this method successfully to provide open space in a growing urban area.

Before 1954, the township had no zoning ordinance, building code, subdivision regulations or planning board. In early 1954, the owner of a large tract of 342 acres in the township presented to the governing body a subdivision of approximately 1200 building lots. About this time, the township adopted a new zoning ordinance as part of a comprehensive planning program. The developer's land lay in a zone requiring a minimum lot size of 20,000 square feet with a minimum frontage of 100 feet. The developer immediately turned to the courts seeking a judgment establishing the invalidity of the zoning ordinance. Lengthy litigation resulted in both the Superior Court and the Apellate Division ruling in favor of the township's zoning requirements of 20,000 square foot lots.

Early last year, a subsequent owner of the 342-acre tract presented to the Planning Board plans to subdivide his property into 543 building lots with each lot meeting the minimum 100 x 200-foot requirement. His plan provided connection with public sewer and water and reserved a small six-acre tract for possible future business development. After minor revisions the Planning Board eventually granted tentative approval which under New Jersey statute, confers upon the subdivider certain rights for a three-year period. One of these rights states: "That the general terms and conditions upon which the tentative approval was granted will not be changed."

Nevertheless, in February of this year, the Governing Body met with the developer, the Planning Board and their consultants to discuss the feasibility of revising the subdivision plans in a way that all the following objectives could be gained.

1. The lot width and type of home to be constructed would remain the same.

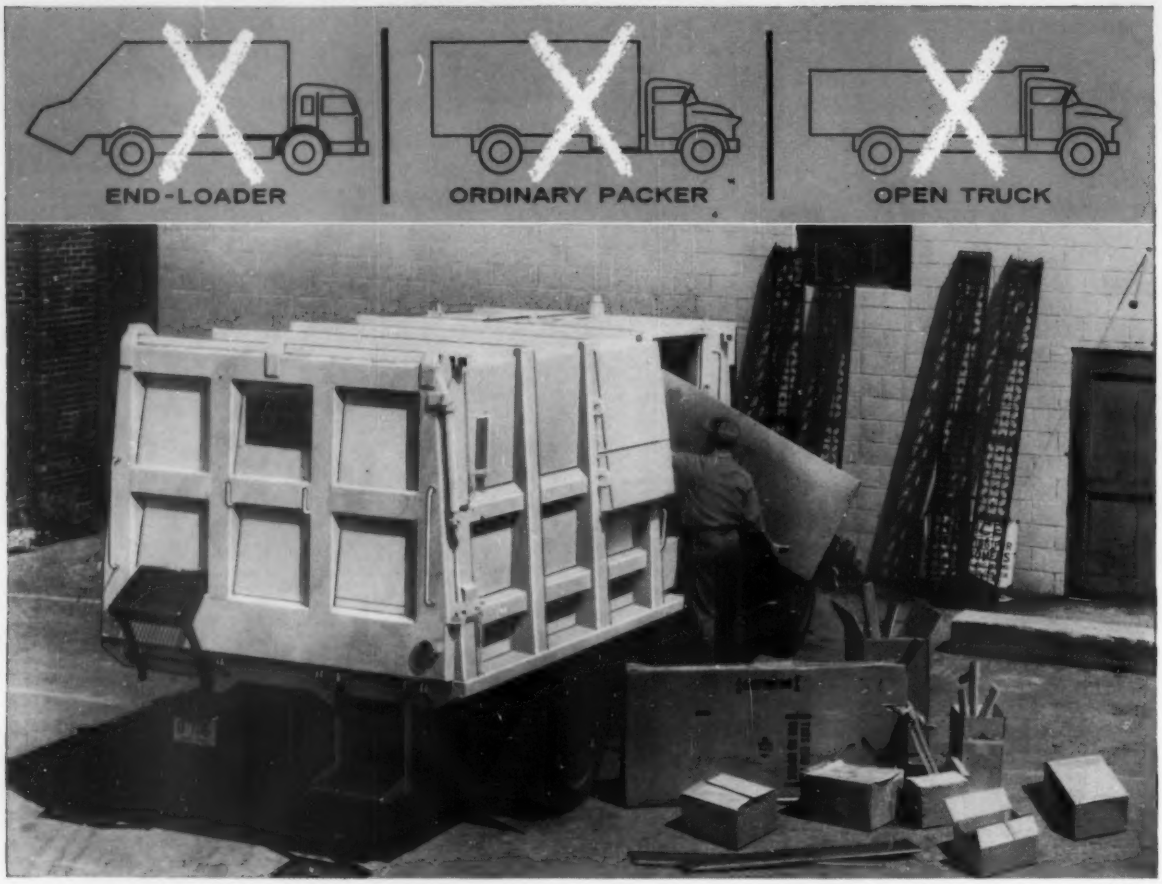
2. There would be no more building lots in the revised plan than in the original plan that had received tentative approval.

3. The total length of streets would be reduced.

4. No lot would have an area less than 17,500 square feet.

5. Neighborhood parks would be dedicated by the developer throughout the subdivision.

6. The business area would be



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Hydro E-Z PACK

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enlarged to serve not only the subdivision but other areas of the township.

Everyone involved immediately realized that the success of such a program could only be attained if the revised plan was agreeable to both the developer and the township. It had to be proved to the developer that the revised plan would be more economical to develop than the one that had already received tentative approval. The township had to be convinced that reducing the lot area as much as 12½% was going to result in a development that would be a greater asset to the township than a development following the original plan.

After a series of meetings with the developer and the township, a revised plan of the entire tract was agreed upon as shown in the accompanying sketch.

Provision for Open Space

This revised layout provides 535 building lots, only eight less than the original. Each lot has a minimum frontage of 100 feet and a minimum depth of 175 feet, or an area of 17,500 square feet. Many lots, particularly corner lots, have a width much larger than 100 feet and an overall area greater than 17,500 square feet. This new plan also has 4,000 less feet of streets. This will result in a substantial saving to the developer as well as a long range saving to the township in street maintenance and service costs.

The plan also provides for a 20-acre school-park site which will serve as park area until a new school is needed, probably some time in 1964. It also provides a 15-acre neighborhood park south of the new highway and an 11-acre neighborhood park north of the highway. Also shown is a 19.5-acre parcel on the edge of the tract to be reserved for a business area at some later date.

Ordinance Amended

Once the plan was agreed to by the township and developer, it was necessary to amend that section of the zoning ordinance that required a minimum lot area of 20,000 square feet throughout this zone. This has been done and the developer is now preparing a new set of engineering drawings based upon the revised sketch, which has been tentatively approved by the Planning Board.

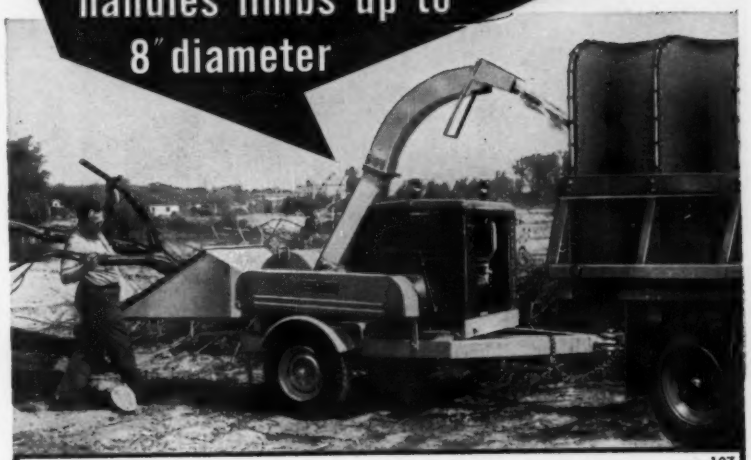
The advantages of such a plan, which are only possible through cooperation between the developer and township, are many:

1. It permits the developer to lower his improvement costs.
2. It increases the value of each building lot because of neighborhood parks in the immediate area.
3. It results in less feet of streets for the developer to install and for the township to maintain when they are accepted by the township.
4. The township receives at no expense parks or school-parks in logical locations at a time when they will be needed most.
5. Other service costs, such as police and fire protection, school costs, trash collection, etc., will be no greater as a result of the same density pattern.

Not Always Advisable

It should be pointed out that although the recently enacted zoning amendment applies throughout this particular 20,000-square-foot zone, it is possible that not all subdivisions should be developed

POWERFUL, NEW
M&M BRUSH CHIPPER
handles limbs up to
8" diameter



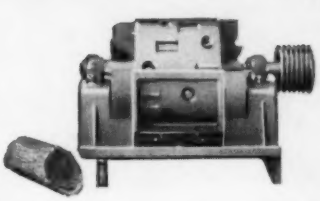
107

AMERICA'S
NO. 1 BRUSH CHIPPER

M & M's exclusive design of small, staggered and tapered cutting knives in the large cylinder allows chips to be *shaved off* . . . not cut off; makes it possible for this new chipper to handle 8 inch logs without creating impact shock responsible for damaging bearing and clutch wear.

Unique twin-bar design allows the chipper to produce either large or small chips . . . a profit-making feature, since small chips have many uses.

The heavy-duty M & M chipper has a built-in blower to regulate direction and distance of chips. Large, heavy rotating cylinder in between heavy-duty roller bearings eliminates overhanging flywheel. All-welded, special alloy steel construction



of simple design assures trouble-free operation and low maintenance costs.

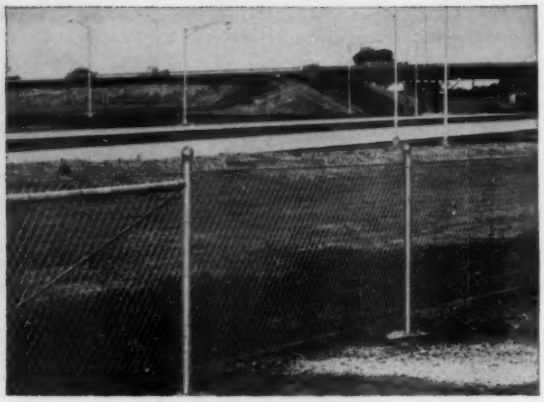
With the addition of this heavy-duty model, Mitts & Merrill manufactures a complete line of chippers in sizes and capacities for any brush disposal requirement. Write today for complete information.

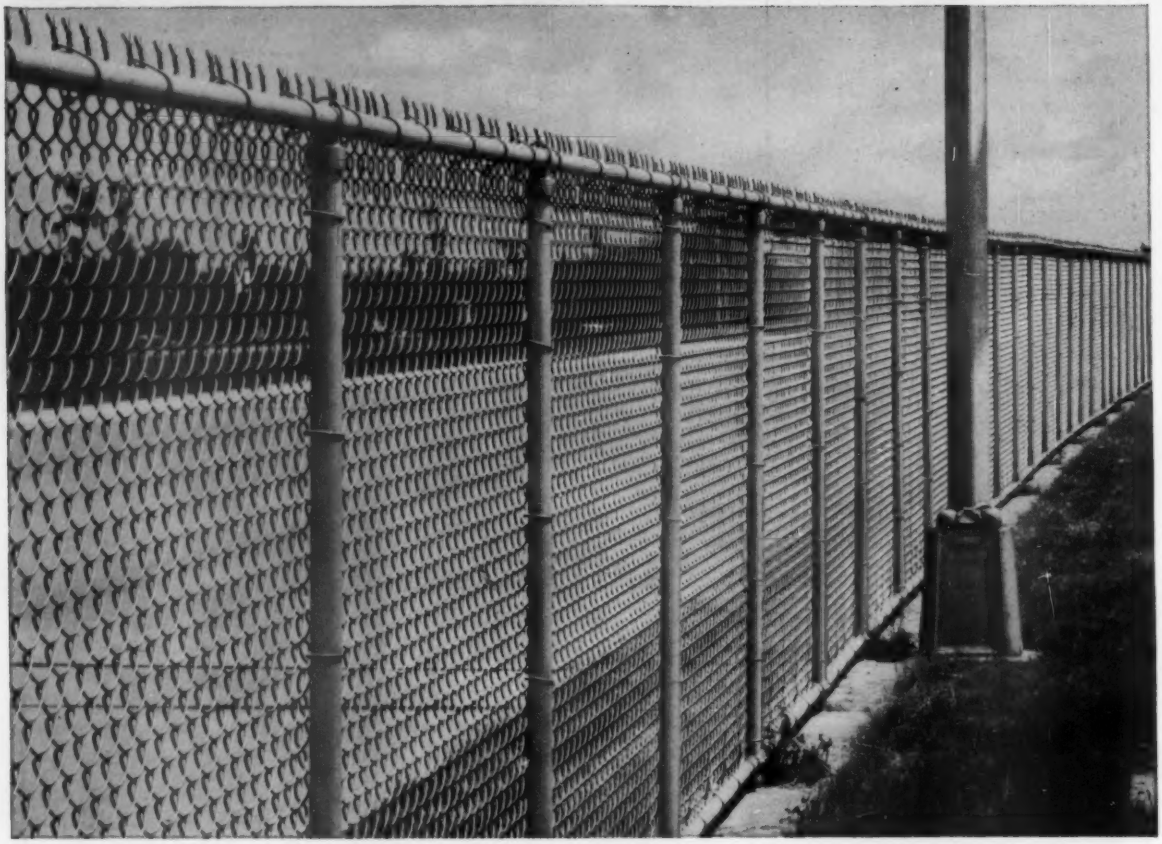
LARGE AND SMALL M&M HANDLES THEM ALL!

MITTS & MERRILL • 1003 So. Water Street • SAGINAW, MICHIGAN

BUILDERS OF WORK-SAVING, MONEY-SAVING AND MATERIAL RECLAIMING MACHINERY SINCE 1854

Aluminum means MILES OF DURABLE FENCE





Chain Link Fencing of Alcoa Aluminum in use throughout the U. S. A.

One of the first aluminum chain link fences, installed over 30 years ago, stands today, unaffected by highly corrosive atmosphere and extremes of weather, its usefulness unimpaired. Today, Alcoa® Aluminum for chain link fencing and fittings is better than ever.

Improved alloys retain their high strength indefinitely. In time, the surface ages to a harmonious gray. No maintenance is required, and chain link fencing of Alcoa Aluminum permanently enhances the natural beauty of the landscape along right of ways, around toll-road entrances and down divider strips. Plantings can be made without concern for repainting or spraying foliage.

Check these other advantages you get with Alcoa Aluminum:

High Strength—Minimum tensile strength of Alcoa's new alloy is 54,000 psi.

Easy Erection—Light weight means less labor.

Readily Available—Reliable manufacturers and erectors in 48 states. Contact your nearest Alcoa sales office.

For your copy of 12-page illustrated booklet and a summary of recently bid prices on 4-ft-high and 6-ft-high all-aluminum fencing, write to Aluminum Company of America, 2058-J Alcoa Building, Pittsburgh 19, Pa.

ALCOA ALUMINUM

Your Guide to the Best in Aluminum Value

For Exciting Drama Watch "Alcoa Theatre," Alternate Mondays, NBC-TV, and "Alcoa Presents," Every Tuesday, ABC-TV

with reduced lot depths in return for neighborhood park areas. Each subdivision should first be carefully analyzed by the Planning Board to see if the proposed park arrangement fits into an overall comprehensive park program for the community. It is conceivable that in certain circumstances it will be more advantageous for the municipality to require the developer to maintain the 20,000 square foot lot size without any neighborhood parks. Such things as topography, soil conditions, availability of public sewers and water, and proximity to other township parks in the area must be carefully considered. The zoning amendment in Rockaway Township has been carefully worded to cover this.

This amendment clearly requires all lots falling within this particular zone to have a minimum area of 20,000-square-feet and a minimum width of 100 feet. It does provide for a reduction in lot area, but not width, if all the following conditions can be met:

1. **The lot size is not reduced less than 12.5%.**
2. **The population density is no greater than if the tract were developed with 20,000 square foot lots.**
3. **The subdivider dedicates for public purposes the same percentage of the entire tract as that by which the lot area has been reduced from 20,000 square feet.**
4. **The area dedicated for public purposes is in a location and shape approved by the Planning Board.**
5. **No area to be dedicated for public purposes shall be less than ten acres.**
6. **The plan on the reduced lot sizes is only permitted if it is mutually agreeable to both the township and the subdivider.**

Both the Township of Rockaway and the developer feel that they have much to gain in seeing the ultimate development of the revised neighborhood park subdivision.

1959-60 STREET LIGHTS

In keeping with the city's street lighting program started in 1951 the City Council of Phoenix, Ariz., has authorized the installation of 2,767 street lights during this fiscal year. The installations will include 667 arterial street lights and 2,100 residential intersection lights.

Cut Snow Plowing Costs by ⅓ with

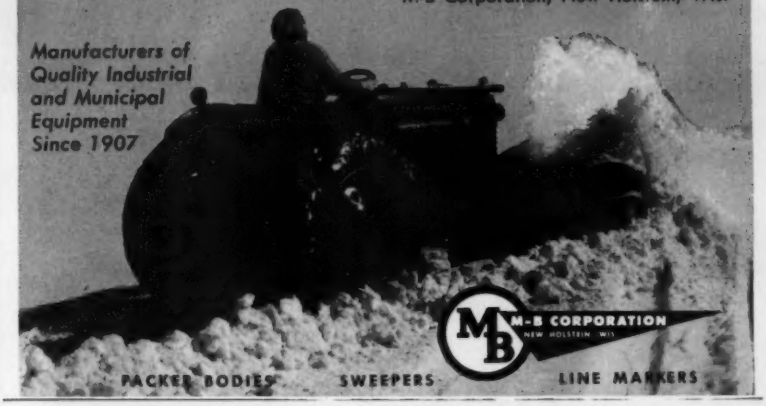
MB SWEEPERS

Why send a man to do a boy's job? Most snow removal jobs can be handled easily by M-B Sweepers. All loose snow up to 6" deep is swept clean from streets, parking lots, airport runways, playgrounds and skating rinks. Unlike big truck plows, a low cost tractor-sweeper combination leaves no layer of snow to pack into an icy sheet. Best of all, M-B Sweepers do the job for pennies, compared to the dollars spent to send out your truck-mounted plows.

THREE TYPES - TWO SIZES. Two-way angling with hydraulic drive for most popular tractor models and tractor loaders. Low cost, fixed angle, mechanical drive, too.

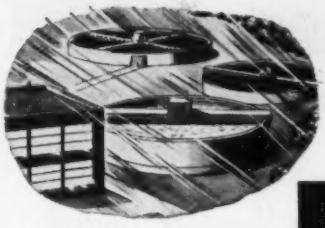
It's not too early to prepare for that first snow now! See your tractor dealer, or wire or call collect to the M-B Corporation, New Holstein, Wis.

Manufacturers of Quality Industrial and Municipal Equipment Since 1907



M-B CORPORATION NEW HOLSTEIN WIS.

PACKER BODIES · SWEEPERS · LINE MARKERS

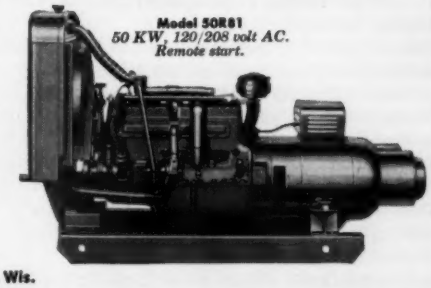


Reliable emergency power for filtration, treatment plants

KOHLER ELECTRIC PLANTS

Kohler plants supply power automatically when emergencies cut off regular supply. Operate sewage treatment and filtration equipment essential to public welfare. Engineered for minimum maintenance; easy to install . . . *Portable power for street repairs.* Lightweight, 4-cycle, quick starting models for on-the-job power tools, night lighting . . . Sizes to 100 KW, gasoline or diesel. Write for folder D-25.

Model 50R81
50 KW, 120/208 volt AC. Remote start.



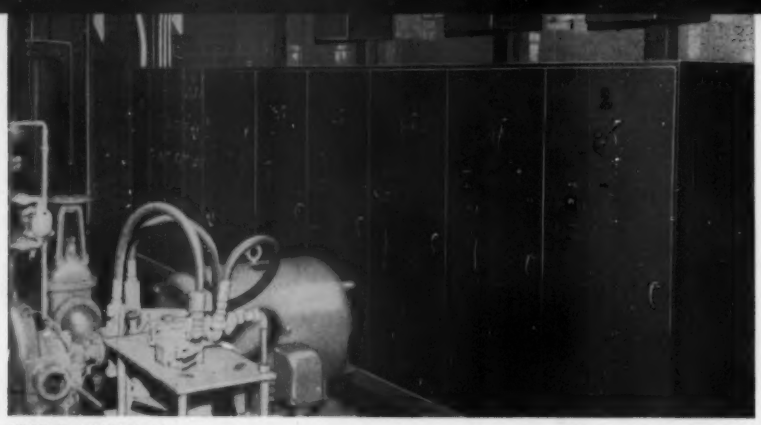
KOHLER CO., *Established 1873* Kohler, Wis.

KOHLER OF KOHLER

Enameled Iron and Vitreous China Plumbing Fixtures • Brass Fittings
Electric Plants • Air-cooled Engines • Precision Controls

"AS SPECIFIED" Lake Forest's New Water Treatment and Pumping Station Equipped with Cutler-Hammer Unitrol

LAKE FOREST, ILLINOIS WATER TREATMENT & PUMPING STATION
Capacity: 7,200,000 gallons per day — Consulting & Design Engineers: Greeley & Hansen, Engineers
Superintendent: G. L. Watson — Electrical Contractor: Art Electric Co., Inc.
Resident Engineer: H. R. Von Huben



CONTROL CENTER #1 Compact grouping of the high lift pump control, main circuit breaker, and pump room auxiliaries Unitrol section cut installation costs . . . promotes efficient, trouble-free operation and maintenance.

CONTROL CENTER #2 Front-and-back Unitrol Construction places the control for the stirring machines, ventilation, de-watering pumps and feeder circuit breaker in the main lobby; and the controls for the boiler, air-compressor, and wash water pump in the adjacent boiler room.

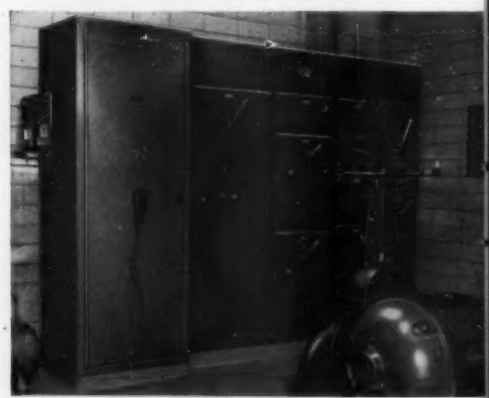
Men who know choose Cutler-Hammer Unitrol

Unitrol simplifies plant design, costs less to install. Exact dimension and construction details are known, eliminating false starts in plant layout and costly on-the-job revisions . . . no special floor or wall preparations are required . . . no hidden installation extras.

Unitrol is *first* in performance and dependability. Extra-life vertical contacts stay clean and trouble-free. Adjustable overload relays work every motor up to rated capacity safely without needless pumping interruptions caused by nuisance tripping. Full three-phase, 3-coil overload relays easily included whenever desired.

Unitrol Control Centers never become "orphans." Complete factory records are maintained so that whenever pumping facilities are expanded the Unitrol Control Center "grows" without having to re-engineer the total job. This feature alone has saved thousands of dollars for many rapidly growing municipalities.

Be sure you have all the latest facts on Cutler-Hammer Unitrol . . . its many extra features assure you better plant design, important installation savings, and dependable trouble-free operation. Write now for the new descriptive bulletin S203, Cutler-Hammer Inc., Milwaukee 1, Wisconsin.



REMOTE PUMPING STATION Earlier improvement to Lake Forest's water system included the construction of a 2,000,000 gallon underground tank and remote controlled pumping station. Here, too, Cutler-Hammer Unitrol is used to control the electric motor driven equipment.

CUTLER-HAMMER CONTROL

CUTLER-HAMMER

Cutler-Hammer Inc., Milwaukee, Wis. • *Division:* **Airborne Instruments Laboratory.** • *Subsidiary:* **Cutler-Hammer International, C. A.**

Associates: Canadian Cutler-Hammer, Ltd.; Cutler-Hammer Mexicana, S. A.; Intercontinental Electronics Corporation.

Original square final (stabilization) basins in the foreground have been supplemented by circular one at left background. Carbon dioxide producer building is at right center and chemical building is in the background.

50% Expansion Doubles Capacity

Kansas City, Mo. revamps its water plant, creates flexibility by transforming old unit into three independent parallel plants

By **G. E. HANDS**, Principal Engineer
Burns & McDonnell Engineering Co.
Kansas City, Mo.

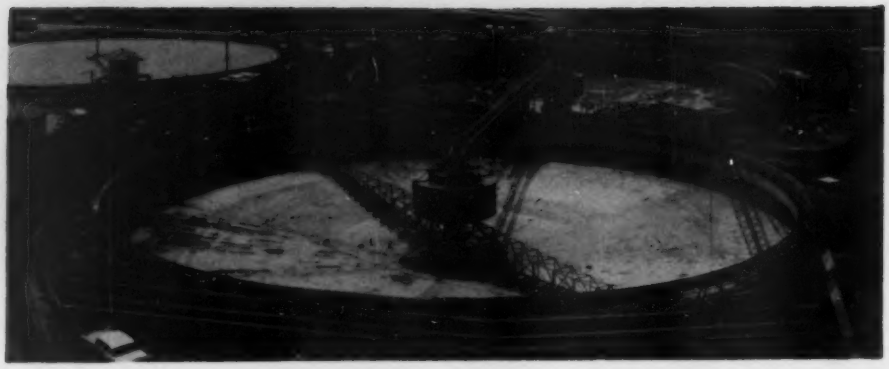
More than doubling firm water-supply capacity with an increase in physical plant of only 50%, and complete modernization, from pre-sedimentation tank inlets to plant outlets, have kept officials of Kansas City, Mo., busy since 1951. These problems—and their solutions—are only a few of the unusual features incorporated in the city's water works expansion project, now substantially complete.

Since a serious flood of the Missouri River in 1951, plant expansion projects have been racing neck-to-neck with increasing demands. At times it has appeared that demands would exceed installed capacity, and occasionally emergency measures have been necessary. But following a master plan of construction and letting contracts in the order of their value in eliminating "bottlenecks" in the treatment process are paying dividends. Plant capacity has increased steadily and is now nearing the 210 mgd goal of this project.

Boom and Obsolescence

The original plant constructed in 1924-27 produced settled, filtered and chlorinated water at the rate of 100 million gallons per day and was thought to be adequate for demands of 1975. It provided primary sedimentation in four 200-foot-diameter tanks, mixing of coagulants in a vortex mixer, secondary sedimentation in three square tanks, final sedimentation in two square tanks, filtration through 24 4-mgd filters and final chlorination. One of the unique features of the old

Five new 50-mgd, 1,000-horsepower vertical-type pumps at the plant.



Increased sedimentation capacity is provided by new center-drive, center-inlet primary basins. Old traction-type sludge removal units are at the left.

plant was the manufacture of filter alum from bauxite.

In 1941, the city modified the plant by:

1. **adding to the chemical building facilities for chemical storage, lime slaking and feeding to provide for lime-soda-ash softening of water;**
2. **modifying the secondary and final basins for softening; and**
3. **replacing the vortex mixers with hydraulic jumps.**

New 3-in-1 Plant

In 1952 construction began on the current expansion and modernization program. Two presedimentation basins were added to the four that already existed. Open flumes were provided to replace the original conduit which had a capacity of only 100 mgd. A final (stabilization) basin was added to supplement the two original square tanks.

Included in this program were 12 new filters and a 7,000,000-gallon clearwell. Chemical storage and feeding capacities were doubled and new research laboratory facilities were provided. The pumping capacity was more than doubled.

Flumes and conduits were rearranged so that the water plant became, as the master plan developed, three independent parallel plants, each of 70-mgd capacity. Yet they were interconnected so that units and tanks now may be removed from service or bypassed through adjacent units without interfering with operations in the remainder of the plant. Provisions were made for adding a fourth softening and stabilization basin, although it has not yet been added.

Old presedimentation basins were modernized. Originally the cross-flow circular basins contained traction type sludge removal equipment; they were not very efficient as raw water settling basins. Only heavy sand settled out. Besides, winter ice on the basins froze to the steel framework extending through the water and eventually stopped the mechanism. With scrapers out of action, basins soon filled up with sand and silt that had to be removed each spring by hand shoveling and sluicing. The new equipment feeds raw water at the center of the basin and directs it out radially, under a baffle to a weir completely around the basin. Moving parts are protected from the winter weather and are completely submerged to operate as readily with two feet of ice over the basin as with none.

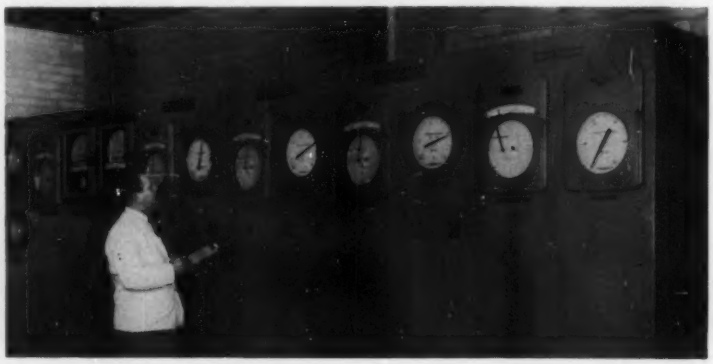
Softening plant sludge is returned and mixed with the raw water of the presedimentation basins to aid in turbidity removal. Turbidity of the basin effluent now seldom reaches 800 parts per million, although turbidity in the raw water frequently exceeds 5,000 ppm.

Parshall flumes replaced hydraulic jumps so that the flow between presedimentation basins and softening basins can be measured. The turbulence of water from the Parshall flume also serves to mix the chemicals applied for softening and coagulation.

Inlets to the flocculator zone, already provided, were improved for better distribution of the water and a closer approach to the theoretical detention time. Weirs were added at the effluent end of the settling basin to decrease the original weir overflow rate of 70 gpm per foot of weir to 23 gpm at the new capacity. A distinct improvement in basin effluent quality has resulted.

Recarbonation basins were installed between the existing settling basins. Because of the frequent need for cleaning these basins and the diffuser equipment in them, they were provided with motor-operated isolating gates and drain valves for quick drainage.

Stabilization of the lime-softened water is provided by a new final basin, added to complete the scheme of the three parallel plants. Formerly, unstable water was applied to filters where it incrusted sand grains, enlarged their size and cemented the sand bed. Eventually, cemented sand had to be removed with jackhammers and replaced with new sand. This was repeated



Each gallery of filters is monitored by individual rate-of-flow indicators, rate of flow summators, and wash-water-flow indicators.

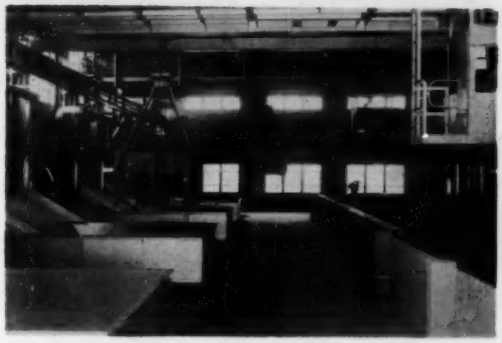
MODERN INCINERATION PLANT AT JERSEY CITY, N. J., HAS MORSE BOULGER EQUIPMENT

ROTARY STOKER

—600 tons per 24 hours—

4 MORSE BOULGER automatic, continuously operating, cylindrical, mechanically stoked units.

NO MANUAL STOKING



CHARGING FLOOR

This MORSE BOULGER plant operates at capacity and in accordance with all the requirements of air pollution ordinances. MORSE BOULGER applied their incinerator experience of over 60 years to achieve these efficient results. Operation and maintenance costs are the lowest on record for a 600 ton plant. This modern plant very evidently proves the advantages and the economy of cylindrical stoker units. The same results are possible for any community. We solicit your inquiries.

ASK ABOUT MORSE BOULGER SPECIAL INCINERATOR FEATURES— The vertical spray chamber for low-cost fly-ash elimination and hydraulically operated ash dumping grates.

For details about MORSE BOULGER MUNICIPAL INCINERATOR UNITS with rotary stokers write for Bulletin No. 111-D. We would appreciate the opportunity of discussing your refuse disposal problem with you.

MORSE BOULGER, INC.

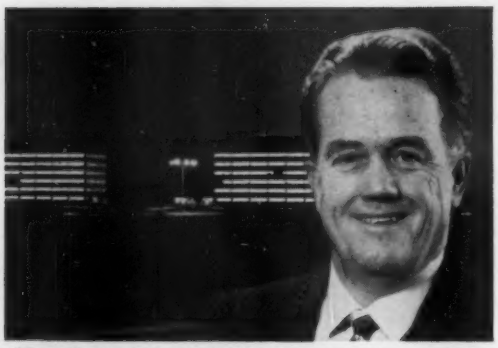
DEPT. A 80 FIFTH AVENUE, NEW YORK 11, N. Y.

Representatives in Principal Cities

Mayor Charles C. Dail says:

"A modern water system helps San Diego, California grow and prosper!"

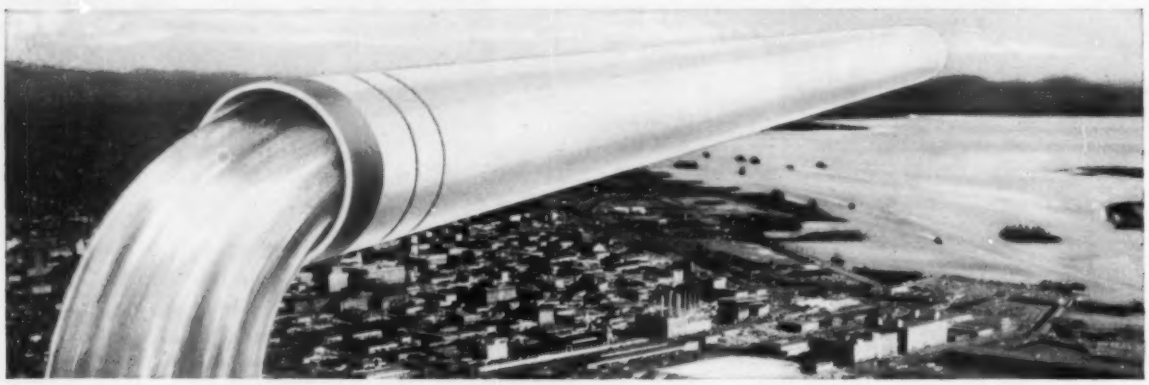
"Our city's industrial volume has grown more than four times in the last ten years, creating more jobs, more business activity, more all-round opportunity. One reason for our growth is our excellent water system, which includes many miles of Transite Pipe! Let me show you why"...



"Manufacturing plants like this are continuously being attracted by San Diego's plant-site advantages. Among the most important of these is our supply of pure, clear water"...

"Busy shopping throughout the city reflects our active business climate and high rate of employment which are affected so importantly by the efficiency and economy of our water system"...

"Mammoth reservoirs supply the millions of gallons of water we need daily for home, business and fire protection . . . much of which has been carried by Transite Pipe since 1934."



How Transite Pipe helps supply the pure low-cost water every city needs

Made of tough, durable asbestos-cement, Transite® Water Pipe cannot rust . . . resists corrosion . . . protects water purity and clarity from treatment plant to home and industry.

Transite Pipe also saves tax dollars for other uses—it is installed quickly and economically . . . its smooth interior keeps pumping costs low . . . and it is noted for its unusually long life.

For information on how Transite Water Pipe (and Transite Sewer Pipe, too) can serve your city, write Johns-Manville, Dept. AC, Box 14, New York 16, N. Y. In Canada, Port Credit, Ontario.

Your prosperity, welfare, safety depend on good water . . . and plenty of it. Now's the time to support your water program . . . and water works officials.

JOHNS-MANVILLE

JOHNS-MANVILLE JM PRODUCTS

every two or three years. The new final basin is equipped with high-speed flocculators and provided with double the detention time in the flocculation zone. Sludge removal and return to basin inlets have been provided. With these facilities, the new final basin is able to deliver a constant supply of stable water to the filters.

Filters

The new filters are equipped with surface wash, and a much higher rate of backwash than originally available. The surface wash, using a fixed-jet (Baylis) plan, can wash at a rate of 6 inches rise per minute while backwashing at 36 inches rise per minute. Old filters were limited to a backwash rate of only 20 inches per minute because of height and size limitations of the original wash water tanks. The system was modified in order that old filters can also be backwashed at the higher rate.

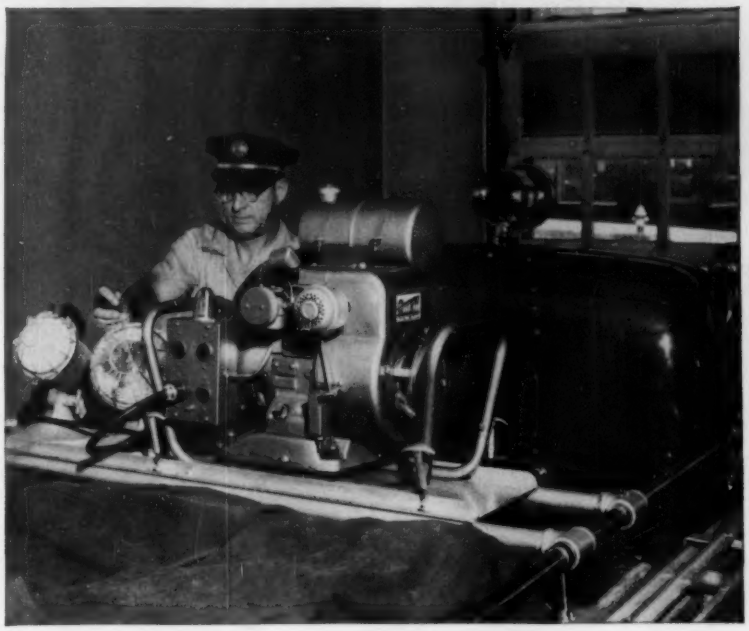
The only clearwell storage of the old plant was under the filters, so close coordination between the pumping rates and treatment rates was required. The new 7,000,000-gallon clearwell has relieved this problem, permitting all necessary flexibility between treatment rates and pumping rates.

Tunnel Need By-passed

Old secondary pumps delivered water through a 90-inch tunnel across the Missouri River to two pumping stations that serve Kansas City South. The pumping head was very low, aimed only at overcoming friction in the tunnel. It was determined that almost twice as much water could be pumped through the tunnel if higher-head pumps were furnished. Installation of new high-head pumps that deliver water at the higher rates proved much less costly than drilling another tunnel or laying additional mains across the river. The old pumps, modernized with new motors, were retained for use during lower rates of pumpage.

The water plant has never been flooded but its vulnerability to floods is recognized. Failure of a levee during a major flood could result in water three feet deep over the filter operating floor, and inundation of existing pumping pits. The five new Peerless 50-mgd, 42-inch pumps furnished were therefore of the vertical-type with motor and switchgear well above the design flood stage. The clearwell was designed against flotation and contamination by flood water. Also, a

Onan NEWS REPORT



Department uses two Onan plants to fight fires, and hurricanes, too!

The 1,500-watt portable Onan plant mounted on the rig above is strictly a fire-fighting tool for the Oxford, North Carolina department. Quickly detachable from the truck mount, it can be carried right up to the fire site to operate floodlights and tools.

The Onan 10,000-watt standby plant below helps fight fires and other disasters. In addition to assuring power for police radio, headquarters lighting, and the air-compressor fire signal system, it also serves the local Civil Defense organization, guaranteeing radio communications when a hurricane or other disaster strikes the community.

10KW PLANT HANDLES ALL ESSENTIAL NEEDS

Radio, air compressor and lights are on the emergency circuit. A flip of the switch starts the plant. Onan also supplies automatic start-stop transfer controls for permanent installations where personnel are not always on duty.

Call the Onan distributor listed in your phone book or write for information

D. W. ONAN & SONS INC.

ELECTRIC PLANTS GENERATORS ENGINES ENGINE-COMPRESSORS
2547 University Avenue S.E. • Minneapolis 14, Minnesota

Onan ELECTRIC PLANTS

wherever your jobs call for bent pipe or conduit

Make big savings on labor and materials

with a Greenlee Hydraulic Pipe Bender

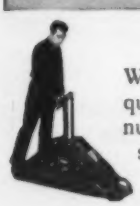
Bend pipe or conduit where and when needed with a compact, portable GREENLEE Lightweight Hydraulic Bender. Three models to select from to give you the exact equipment needed for your jobs.

No. 880-M2 (above) A small, portable unit that bends six sizes of pipe or conduit ¼" - 2". Easily carried and operated by one man. Makes full 90° bend with one ram stroke. Operated with hand pump, as shown, or with portable power pump.

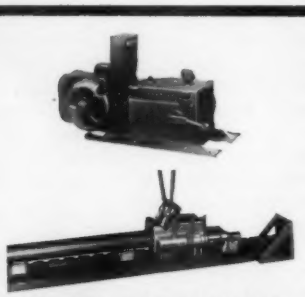
No. 883 (left) A medium-range, portable unit that bends eight sizes of pipe or conduit ½" - 3". Makes full 90° bend with one ram stroke. Operated with portable power pump, as shown, or hand pump. Takes but one minute to make a 90° bend in 3" pipe when operated with power pump.

No. 884 Similar in design to No. 883, but of larger size to bend 10 sizes of pipe or conduit ½" - 4". Regularly supplied with GREENLEE Power Pump illustrated at left. Takes only 4 minutes to make 90° bend in 4" pipe.

GREENLEE bender line also includes No. 785-BE . . . a large, heavy-duty power bender for pipe up to 6".



With a GREENLEE Lightweight Hydraulic Bender *one* man can quickly, easily make on-the-spot bends in conduit or steel, aluminum, and stainless pipe. A full 90° bend is made with *one* ram stroke, one setting. Compact, lightweight . . . easily carried or wheeled from job to job. Pipe or conduit easily inserted and removed from front of bender. "Quick-removal" positive-locking support pins. Hydraulic ram can be used with GREENLEE tubing, thin-wall conduit and bus-bar bending attachments. Complete range of sizes for pipe and conduit ½" through 4". See your supplier or write for literature.



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High-pressure power pumps for operating GREENLEE Hydraulic Benders and Pipe Pushers, and other hydraulic rams and jacks. Hydraulic Pipe Pushers for easy, fast installation of underground piping . . . eliminate tearing up streets, walks, lawns, floors.

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TOOLS FOR CRAFTSMEN
GREENLEE

drainage pump station, for removal of plant wastes during occasions of high river stages, was planned for future construction.

Separate Control Systems

Three central control stations are provided at the water plant. One is for control of all pumps in the Kansas City North area, another is for control of the water treatment processes, and the third controls filtration rates.

Installation of central controls has saved the many man-hours per month necessary to man widely separated pump locations. Full-time attendants would have been on duty at stations that now are unmanned except during maintenance and inspection checks.

The pumping control center, located in a new extension to the secondary pumping station was furnished by General Electric Corp. At this location, five low-head secondary pumps, six high-speed secondary pumps, five Kansas City North pumps, five house service pumps, three booster district pumps and six raw-water, low-lift pumps are controlled. To start, stop, and regulate the pumps required, information is brought to a panelboard from each pump at every pumping station. Panelboard and instruments were furnished by the Penn Instrument Co. Rate-of-flow, discharge pressure, tank elevations, river stage, valve positions, clearwell levels, and similar information, are indicated and recorded at the panelboard. Flows of the several meters measuring the discharge from each pumping station are automatically added together and the total flow is recorded on a separate meter.

Westinghouse Corp. electronic supervisory control of intake and raw water pumping systems transfers practically every function of that station to the central point. The only operations that now require attention at the intake are maintenance and servicing of the equipment.

Many major operations of water softening and treatment are centrally controlled in the chemical building. The control center by Minneapolis - Honeywell Regulator Co. is equipped with a console bench and desk from which the operator may open, close, or throttle valves and gates, and increase or decrease rates of chemical feeding.

More than 80 miniature instruments are mounted on the control panel. These indicate and record operational data from the entire plant on 30-day strip charts. Among

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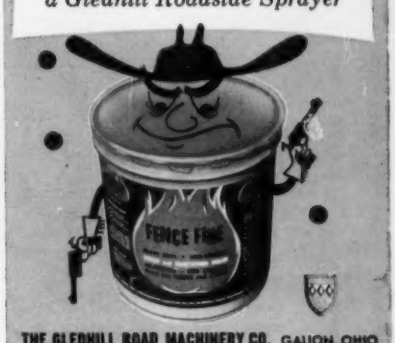
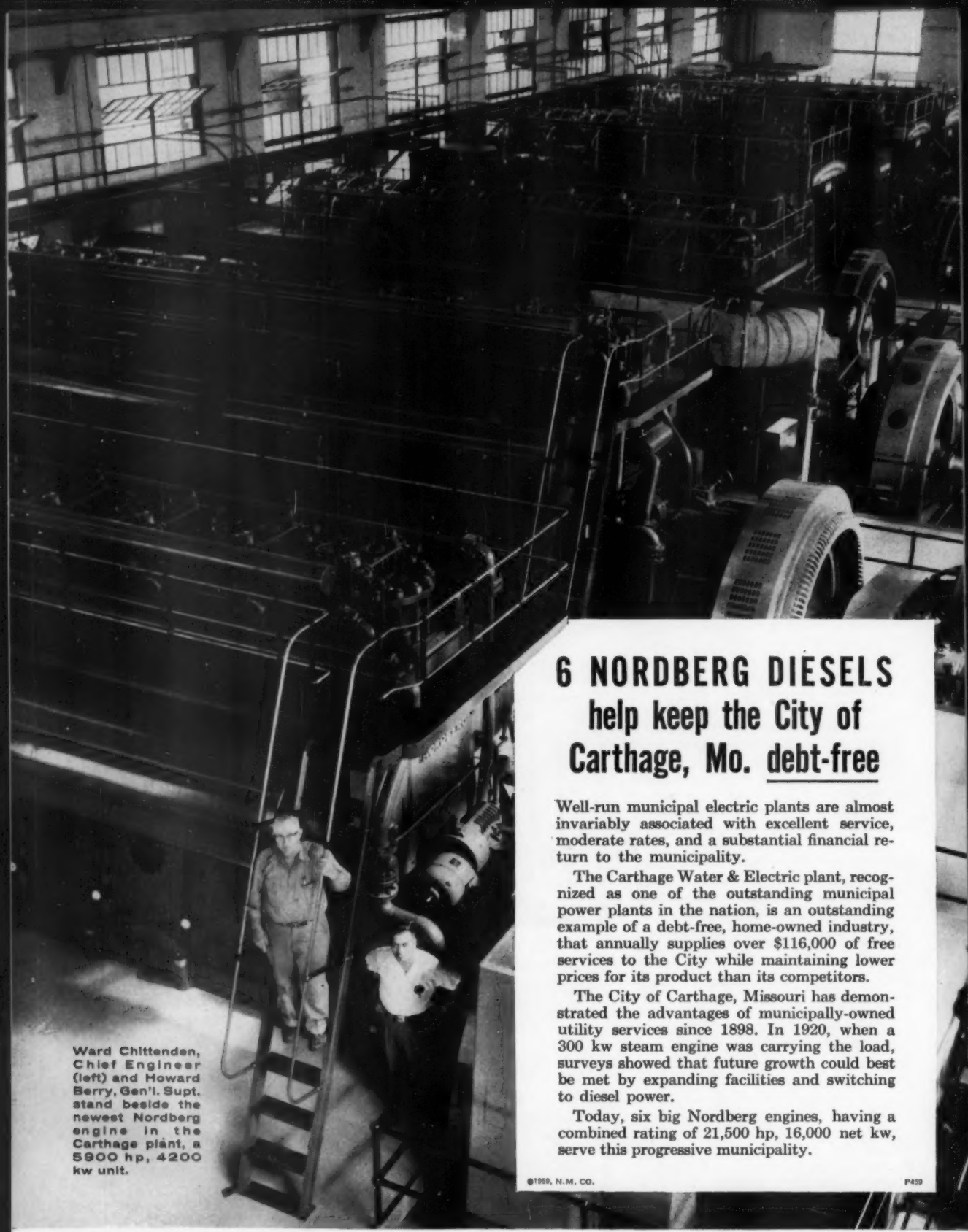


THE GLEDHILL ROAD MACHINERY CO. GALION, OHIO



Ward Chittenden, Chief Engineer (left) and Howard Berry, Gen'l. Supt. stand beside the newest Nordberg engine in the Carthage plant, a 5900 hp, 4200 kw unit.

6 NORDBERG DIESELS help keep the City of Carthage, Mo. debt-free

Well-run municipal electric plants are almost invariably associated with excellent service, moderate rates, and a substantial financial return to the municipality.

The Carthage Water & Electric plant, recognized as one of the outstanding municipal power plants in the nation, is an outstanding example of a debt-free, home-owned industry, that annually supplies over $116,000 of free services to the City while maintaining lower prices for its product than its competitors.

The City of Carthage, Missouri has demonstrated the advantages of municipally-owned utility services since 1898. In 1920, when a 300 kw steam engine was carrying the load, surveys showed that future growth could best be met by expanding facilities and switching to diesel power.

Today, six big Nordberg engines, having a combined rating of 21,500 hp, 16,000 net kw, serve this progressive municipality.

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continuously recorded operations are:

1. **rate of flow through each of the three parallel plants**
2. **lime, soda ash, ferric sulfate feed rates**
3. **rate of flow of return sludge**
4. **activated carbon feed rates**
5. **turbidity and pH of the water**
6. **gas or oil consumed in CO_2 production**
7. **filtration rates**
8. **pumping rates**

An alarm and annunciator system pin-points trouble as it occurs.

The filtration control center furnished by Builders-Providence, Inc., provides both automatic and manual control of each of the three filter galleries. On "automatic," the rate of flow through the filters is regulated by the water level of the influent flume. As the level rises, flow through the filters increases. As the level lowers, the flow decreases. Thus the filters handle all variations in rate of flow up to the capacity of the filters. Water levels in the influent flume are maintained constant within six inches. The new filters were equipped by E. W. Bacharach & Co., with Leopold filter bottoms.

At "manual" position on the control switch, filters may be set at a given rate from which they will not deviate. Each filter may be set on "manual" or "automatic" as desired by the operator.

The rates of flow of all filters in each gallery are summated and transmitted to a recorder in the control room. Surface wash and backwash rates are indicated and totalized. Also, final chlorination is controlled at this point and residual chlorine of water leaving the plant is recorded at this station.

Grounds have been beautified and drives are being repaved. Street and area lighting is being provided for the convenience and safety of the operators. Automatic irrigation systems are being installed to permit night sprinkling of the extensive lawns. The Water Department maintains a public park on unused grounds and provides space for "Little League" baseball fields.

The plant is operated under the direction of J. Robert Popalisky with the assistance of James R. Afflick and Leo Groseclose. Pumping operations are under the supervision of Ralph Wyss. James J. Ramsey is chief engineer and superintendent of the water department, and Melvin P. Hatcher is the director.

COLLECTS LEAVES 4 TIMES FASTER . . .
CLEANS CATCH BASINS 4-12 TIMES FASTER

OBECO designed these units with you . . . MR. DIRECTOR OF PUBLIC WORKS . . . in mind. MODEL TWIN-50 SPECIAL has 33⅓ **greater** capacity . . . 16 yards instead of 12 yards . . . and is **self-dumping!** It vacuums an 8-FOOT swath instead of 12 or 24 inches. On leaf collection alone, this unit has amortized its entire cost (including truck) within 4 years from savings in **labor costs** . . . **and,** worked the **rest** of the year on catch basins. It is the largest vacuum leaf collector, street and catch basin cleaner built . . . but OBECO makes 5 models, a size to fit every municipality. Competitively priced, these OBECO workhorses are kind to your budget and flattering to your efficiency records.

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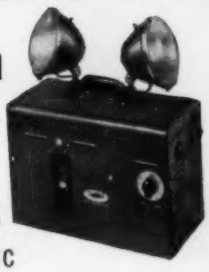

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Ford 4-wheel drive trucks are available in ½- and ¾-ton pickups, chassis-cabs and ¾-ton stake models. See your Ford Dealer . . . and save hundreds of dollars on America's lowest-priced 4 x 4's with Six or V-8 engine!

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LESS TO OWN . . . LESS TO RUN . . . LAST LONGER, TOO!

Surveys show that depressed expressways have the least effect on adjacent property. Pride of ownership is maintained as shown in this view.

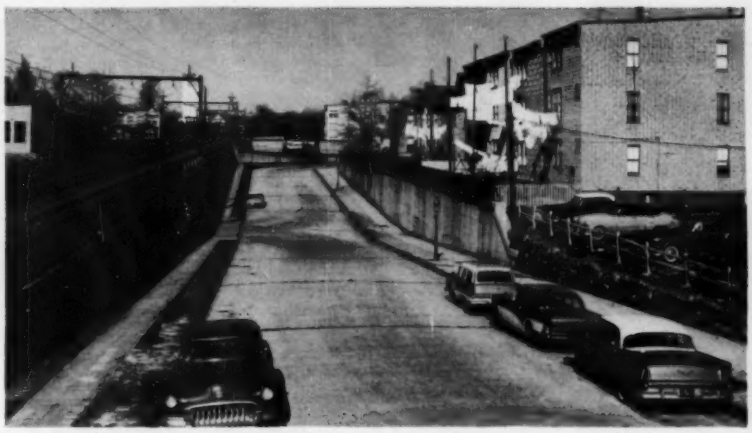
The Economic Impact of Elevated Expressway Construction

By **HARRY A. TAYLOR**, President
Frank H. Taylor & Son, Inc., East Orange, N. J.

An elevated expressway through an urban residential and commercial area may cost less to build than one that is depressed. But the chances are good that it will destroy enough property value to outweigh the savings.

In addition it will lower aesthetic standards, make police protection much more difficult and costly, and form a dividing barrier in your community. While one has trouble placing a dollar price on these values, the cost nevertheless is there.

A comprehensive economic impact study conducted by the writer's firm for the City of East Orange, N. J., attests to the above conclusions. East Orange has special interest in the subject for plans are well under way there to construct an expressway that will bisect the city in an east-west direction.



A sales analysis of property adjacent to elevated railway shows lack of demand for these residential properties as compared to city at large.

Background and Scope

Fortunately, an excellent study area is located within and adjacent to our own community. This consists of:

1. The Garden State Parkway, a depressed facility that traverses the City of East Orange from north to south.

2. The Garden State Parkway, an elevated section on fill that traverses the southern section of the City of Bloomfield from north to south and is contiguous to the depressed road in East Orange.

3. The Garden State Parkway, a depressed section contiguous on its northern end with the elevated section in Bloomfield.

4. The D. L. & W. Railroad, an elevated passenger electric railway facility, chiefly for commuter service, which is partly on fill and partly on viaduct and traverses a route parallel and in close proximity to the proposed east-west expressway.

The study reflects the over-all impact of the two types of expressway construction within the entire framework of the city, not just a

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GREATER RETURN ON YOUR INVESTMENT BECAUSE:

Multiple uses of unit include handling of residential, commercial and industrial refuse;

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small segment. It entailed establishment of the cost of residential type plots by collecting actual sales data over a period of years, setting up an economic base plot, gathering sales information and then evaluating the study.

To do this, we gathered information on 1,021 sales in East Orange during the period 1945 to 1958. This includes 39 acquisitions made by the Garden State Parkway Authority which are not reflected in the analysis, but were used purely for comparative analysis with actual sales data in the period covering construction of the Garden State Parkway in order to measure the acquisition cost with actual market data. The information on sales data was for improved residential type property.

To determine the effect of the parkway and railroad on adjacent property values, the land adjacent to the structures was divided into parallel bands. Four bands were used on each side, each band being 200 feet wide, thus enclosing an area 800 feet on either side of the structures. The land outside the band was the control area.

The study incorporates three periods of evaluation:

1. **Before construction of the parkway (1945-1952)**
2. **During construction of the parkway (1953-1955)**
3. **After construction of the parkway (1956-1958)**

Parkway Impact

Portions of the parkway are bordered with one- and two-family homes, many 30 to 50 years old. Other portions are bordered with one-family homes with a scattering of apartment houses and two-family homes. Several small portions are bordered with apartment houses only. The older homes are in good repair, and in the case of the newer apartment buildings, balconies and picture windows take advantage of the expansiveness offered by the depressed parkway. A survey reveals that no decreases in rentals in any apartments located along the Garden State Parkway have taken place.

In addition, the parkway has definitely contributed to the value of adjacent properties, for the highest point of value is within the parkway bands—higher than in the control area. The increase in sales volume has been on a consistent basis, year by year, over the 14-year period.

We measured the elevated and depressed sections of the parkway in Bloomfield separately and also as a unit, documenting over 400 sales made during the 14-year period.

On a general basis, the properties bordering the elevated section of the parkway are not comparable to those in East Orange, as there are some industrial uses in this area mixed with one and two family homes and some apartment houses. One- and two-family homes do, however, border both sides of the depressed section.

Speculative Rise

Just prior to construction of the parkway, property within the bands adjacent to the elevated section underwent a speculative rise in value not experienced in East Orange or in the depressed section of Bloomfield. This rise continued during construction but dropped after completion of the parkway. At present the band areas in this elevated section show the lowest value when compared to either the depressed section in Bloomfield or in East Orange. During and before construction the depressed section experienced a steady growth in value which overtook and exceeded those in the elevated section during the period after construction.

Comparing the parkway in both municipalities, values of adjacent properties within East Orange have experienced a continuous and stable growth exceeding the growth reflected in Bloomfield.

The railroad study was made to determine the economic impact of a structure elevated on fill which has been in existence for 35 years and traverses the city in a path approximating that of the proposed expressway if constructed as an elevated structure.

An inspection of the area reveals that deterioration has taken place. The concrete walls are discolored, weeds grow out of the cracks, and the embankments are overgrown. The appearance is unattractive and has contributed to blight and negligence in upkeep of adjoining properties. Finally, the sales analysis shows a lack of demand for these residential properties as compared to the general city itself, indicating that the area along the railroad is considered less desirable by buyers.

The residential properties along the right of way show a lack of maintenance and pride of ownership. Some have been converted to rooming houses and sub-standard properties exist. In several instan-

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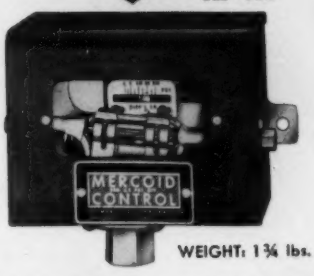

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Provides any of following operations:

1. *Single Pole—Cut-in high* (close on rise)
2. *Single Pole—Cut-in low* (open on rise)
3. *Single Pole—Double Throw*

OPERATING RANGE

Adjustable Operating Range	Differential Fixed (Factory Set)	Maximum Surge Limits
1 to 20 psig	0.5 psig.	30 psig.

CONSTRUCTION

ADJUSTMENT: External
PRESSURE ELEMENT: Fairprene diaphragm
PRESSURE CONNECTION: ¼" I.P.S.
MOUNTING: Has two mounting ears (one on each side of control) or control may be pipe mounted by means of the ¼" I.P.S. bottom connection.
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CASE: NEMA 1—Heavy gauge steel, cadmium plated. Steel cover (with glass front) finished in charcoal-gray.

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From Maine to California, progressive cities take pride in the *cleanliness* of their downtown areas—as these are their public "showcases".

It is here—where extra-clean sweeping counts most—that you will find enthusiastic interest in TENNANT'S revolutionary *vacuumized sweeping.*

You'll see the difference at once, because a TENNANT Model "100" Vacuumized Sweeper provides *ultra-clean sweeping . . . with no dust nuisance at all!* For performance, the new "100" is in a class by itself.

Its powerful brush-and-vacuum system picks up the fine dust that's usually missed . . . as well as heavy, bulky debris. It cleans a 7′4″ path.

You'll find it trimly compact, highly maneuverable. Assures outstanding results in downtown areas, dusty alleys, parking lots . . . as well as in attractive residential areas.

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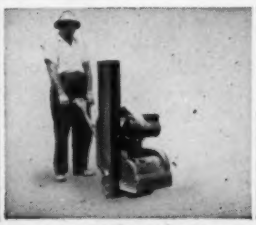
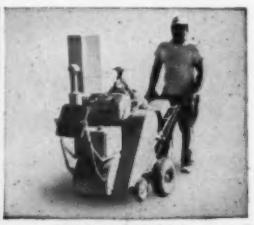


Traffic Line Erasers



Concrete Routers

SPECIALIZED MAINTENANCE EQUIPMENT

ces homes have been converted to commercial use and in others, rear lands are now used for garage purposes, storage, and auto repair shops. While the zone in most cases calls for business use, no major development has taken place.

The study revealed that the lowest point of property value was in band No. 1 adjacent to the railroad and that values increased gradually in each succeeding band away from the elevated structure.

By actual sales analysis the sales activity in the parkway band areas far exceeded that in the railroad band areas. Using the average sales activity for the years 1945 to 1949 as the base, activity in the parkway and railroad bands exceeded the base during the three periods of parkway construction as follows:

Period	Parkway	Railroad
Before Construction	36.5%	25.4%
During Construction	46.4%	30.1%
After Construction	39.9%	—9.8%

Note that after construction the activity in the railroad bands dropped below the base, giving a difference of 49.7% between the railroad and parkway bands.

Actual sales of fully improved real estate were recorded and investigated. This study shows that a property in the railroad bands would bring less than a comparable one in the parkway bands; thus demonstrating that the economic depreciation has been caused by outside factors, rather than by features inherent in the physical property.

Proposed Freeway Impact

The study and results discussed so far are of a general nature and may be applied to most cases of expressway construction in urban areas. However, the purpose of the study was to apply these findings to the proposed east-west freeway in East Orange. This application pertains to two proposed alignments, both traversing the same area with only slight changes in several places. The one called J is elevated and the one called K is depressed.

We found that the estimated true value of real estate in the four bands of the freeway, if elevated alignment J is selected, is $29,726,620, but if depressed alignment K is selected, the true value is $31,734,648, or a difference in favor of depression of $2,008,028.

Over a period of three years we studied the experience of the depressed Garden State Parkway. By use of the percentage of increase in the experience tables, we ascertained the difference in value between the elevated and the depressed freeway and found it in favor of depression by an amount of $1,933,000.

We now come to the impact of elevated construction on properties that adjoin or are contiguous to the freeway. The consequences that follow are reflected in loss of value to the property through functional and economic depreciation and obsolescence. Our studies show consequential damages due to the freeway's influence on the true value of properties within the Band of Influence No. 1 (the band being 200 feet wide and 1.5 miles long) that result in a loss to the city of $2,334,668. In addition, the loss in value to a small wedge of property between the proposed elevated freeway and the existing elevated railway would amount to $756,000.

The four elements just mentioned constitute a loss to the city, if elevation is selected for the freeway,

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Unretouched photo of Buffalo Turbine Sprayer in action, showing how Turbo-Spraying reaches the tops of the tallest trees.

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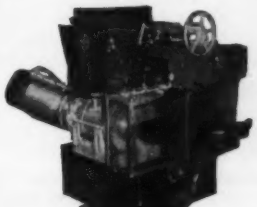
THE MODERN BUFFALO TURBINE SPRAYER-DUSTER DOES BOTH JOBS!



Buffalo Turbine Sprayer-Duster, Model F. Air volume 12,000 to 14,000 CFM. Air velocity up to 180 MPH.

Why subject the citizens of your fair community to disease carrying flies and mosquitoes? Why let dutch elm disease destroy your beautiful trees? The modern BUFFALO TURBINE SPRAYER-DUSTER deals death to all insects by TURBO-SPRAYING of liquids for larviciding and TURBO-DUSTING for adult insect control. It is the only sprayer on the market that dispenses liquid and dust separately or simultaneously by a powerful "Turbulent Air" blast that carries to the tops of the tallest trees or penetrates the thickest brush. Write for a copy of the new Buffalo Turbine catalog or let our representative give you the complete story.

Buffalo Turbine Agricultural Equipment Co., Inc.
69 Industrial Street **Gowanda, New York**

With safety flag flying, 3-wheel A-W roller "takes-off" as it resurfaces new jet runway at Philadelphia International Airport.

Austin-Western 3-wheel roller speeds resurfacing at Philadelphia Airport

The contract called for resurfacing 5800 ft. of runway, 150 ft. wide, at the Philadelphia International Airport. Contractor James J. Skelly, Media, Pa., chose an Austin-Western 3-wheel 10-14 ton roller to lay the required 1-in. wearing surface over a 2-in. base of bituminous concrete.

Well pleased with A-W

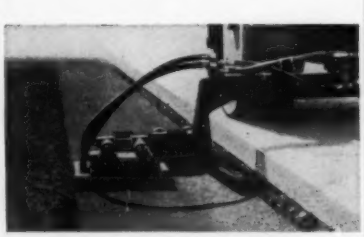
Mr. Skelly says, "I'm well pleased with the Austin-Western roller. It's more compact than most competitive rollers —easier to handle and gives the operator better visibility. Its V-8 engine delivers plenty of power, permitting the A-W roller to keep pace with the average daily output of 1600 tons of asphalt paving from two machines. There have been no maintenance problems. The A-W is an excellent roller—ideal for a progressive paving organization!"

Exclusive A-W features include hydraulic steering, full-width seats that let operators sit to right or left for better visibility; long-life oversize axles and antifriction bearings; many interchangeable parts; beveled outside roller edges that won't mark hot materials.

A-W 3-wheel rollers available in 8 to 11, 10 to 12, 12 to 14-ton models; tandems in 5 to 8, 8 to 12, 10 to 14-ton models. Portable tandem variable between 3½ to 6 tons. A-W vibratory Roller-Compactor unit fits any make 3-wheel roller; vibratory widener attachment also available.

A-W for profit

No matter what your compaction requirements, there's an Austin-Western roller to profitably meet your needs. Investigate! Consult your nearby Austin-Western distributor or write direct.



Vibratory widener attachment—for use with any 3-wheel roller equipped with A-W Roller-Compactor unit . . . may be mounted left or right.

Austin Western
CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.
100th YEAR

BALDWIN · LIMA · HAMILTON

Power graders • Motor sweepers • Road rollers • Hydraulic cranes

of an aggregate of $7,031,696. This constitutes our estimate of immediate loss and almost equals the $7,300,000 additional cost of constructing the depressed structure over the elevated one as estimated by the New Jersey State Highway Department.

On the other hand, a depressed structure will cost the city in the form of reduced tax revenue. We studied every property within the proposed right-of-way of alignments J and K to determine proposed tax revenue. In the case of the elevated alignment the total loss in tax revenue per annum will amount to $171,035 whereas, in the case of the depressed alignment the annual tax loss will amount to $185,-840.

Should the pattern of the Garden State Parkway be repeated by a depressed freeway this tax loss can be made up over a period of years; but in the case of an elevated freeway, there is every possibility that the trend will be in the opposite direction.

However, there is a greater impact to be considered which is undeterminable at this time because it is impossible accurately to gauge future experiences and conditions. Nevertheless, our nation-wide study of highway influence, our research, interviews with experts, and experience within the City of East Orange indicate that an elevated structure will affect land use and future development adversely, whereas it is our opinion that the depressed construction should stimulate activity and that the adjacent lands will be put to their highest and best use.

Also of extreme importance is consideration of aesthetic values, the amenities, and the social factor. The last item gains importance when one considers the elevated structure would require 13 tunnels approximately 180 feet long through which pedestrians must pass. This is of special significance in the case of East Orange because of the close proximity of the freeway to the existing elevated railroad. This presents a serious danger with respect to crime and possible death.

Thorough Research

This article is but a brief resumé outlining in general the results of an extremely comprehensive study. The following data will give some impression as to the thoroughness with which the subject has been pursued.

A staff of nine people contributed a total of 16,000 work hours. Teams

of investigators, skilled in their calling of analysis and perception, interviewing and reporting, visited the states of Michigan, Texas, Massachusetts, Rhode Island, Connecticut, Virginia, Illinois, Oregon, California, and New York. Intensive studies were given to the cities of Detroit, Dallas, Houston, Richmond, Boston, Chicago, Los Angeles, San Francisco, and Portland. We devoted countless hours to the effects of the expressways which belted or traversed these cities. In addition our studies included questionnaires to mortgage bankers, realtors, appraisers, real estate counselors, assessors, city planners, and other officials, and a thorough search of all literature on the subject.

These questionnaires show that in most cases any type of expressway will have a deleterious effect on adjacent property values, but between the two types, the elevated and the depressed, the former produces a considerably greater effect.

This does not mean that all expressways built in urban areas should be of the depressed type. However, multi-million dollar structures of this type should merit a thorough study of the economic impact on adjacent lands and the results should affect the decision to elevate or depress the structure.

Police, Fire Work Week Reduced, National Survey Shows

The police work week was cut by 67 cities in 1958, but patrolmen in half of the U. S. cities over 10,000 population still work 40 hours a week or more, the 1959 *Municipal Yearbook* reveals.

Firemen in more than half of this country's cities of 10,000 population work 67 hours a week or more, although 108 cities cut the weekly hours in 1958.

Salaries for both fire and police are higher, on the whole, in larger cities than in small. The median salary for policemen just starting work is $4,800 in cities over 500,000 but only $3,900 in cities between 10,000 and 25,000. Median salaries for policemen at the top of the pay scale in the largest cities is $5,502 compared to $4,327 in 10-25,000 population cities.

Similarly, firemen's salaries in the largest cities have a median of $4,509 at entrance and $5,202 at the top compared to $3,845 and $4,260.

Salaries of firemen are much closer to policemen's salaries in smaller cities than in larger ones.

Clamshell-equipped Austin-Western truck-mounted crane removes flyash from settling basin of Philadelphia incinerator.

Philadelphia's A-W 210-P truck-mounted crane speeds bulk materials handling

Philadelphia's Street Department purchased an Austin-Western truck-mounted crane to meet its need for an inexpensive, mobile and easy-to-operate unit to handle bulk materials. Two years of dependable performance from this unit, Model 210-P, helped influence the 1959 purchase of a self-propelled Model 210.

Tackles any bulk materials job

The truck-mounted crane, equipped with a clamshell bucket, removes an estimated 10 tons of flyash daily from incinerator settling basins. It also performs other bulk handling chores about the city.

To sanitation officials, one of the most outstanding features of the crane is its economy and simplicity of operation—the truck driver also operates the crane.

Philadelphia's second A-W, the self-propelled Model 210, is equipped with bulldozer blade and grapple. It dozes broken wood and lumber into piles, then loads it for trucking to the incinerator.

Helps save tax dollars

Model 210-P, for truck or stationary mounting, has a 4½-ton-capacity range—hydraulic-controlled rotating 18-ft. telescoping boom. The Model 210 self-propelled hydraulic crane has a 5-ton-capacity range; 18-ft. telescoping boom rotates in full circle. This unit, which travels at highway speeds, features exclusive A-W all-wheel drive and all-wheel steering for unsurpassed traction and maneuverability on any surface and in the tightest quarters.

Learn how A-W cranes can help you make important tax dollar savings! Ask for a demonstration. Get all the facts—see your nearby Austin-Western distributor today or write us direct.

Investigate—New self-propelled models available!

Austin 1859 AUSTIN-WESTERN 1959 100th YEAR PARTNERS IN PROGRESS Western
CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.
BALDWIN · LIMA · HAMILTON
Power graders • Motor sweepers • Road rollers • Hydraulic cranes

GIANT CROSS COUNTRY TEST...

Sweeping Streets in

60 CITIES IN 69 DAYS

PROVES MOBIL SWEEPER PERFORMANCE...ECONOMY ...DEPENDABILITY

Measure your sweeper's performance with these record results compiled by a standard production model Mobil Sweeper travelling coast to coast. (Data recorded mile by mile on Tachograph)

- Travel 7100 miles to demonstrate in 60 cities without mechanical failure of any kind. (This is 1000 miles more than average city street sweeper travels in one year).
- Sweep 615 miles on one gutter broom and still have enough wire left for another 150 miles.
- Sweep 314 miles on rear broom and still have enough broom left for another 100 miles.
- Tires in excellent condition with plenty of tread and no unusual wear.
- Sweep under every conceivable condition in comparison tests with other makes and receive acclaim for best sweeping performance.

A regular production model Mobil Sweeper now touring the country under its own power is demonstrating why Mobil Sweeper is first choice with officials who know sweeper values best. No other sweeper has ever matched this all-out test for dependability, ruggedness and sweeping performance under every street condition. A Sangamo Tachograph has recorded performance mile by mile. Complete performance record will be on display at APWA Convention Seattle, Washington, when test is completed.

Again we say:

"MOBIL SWEEPER® offers the greatest sweeping value for your dollar."

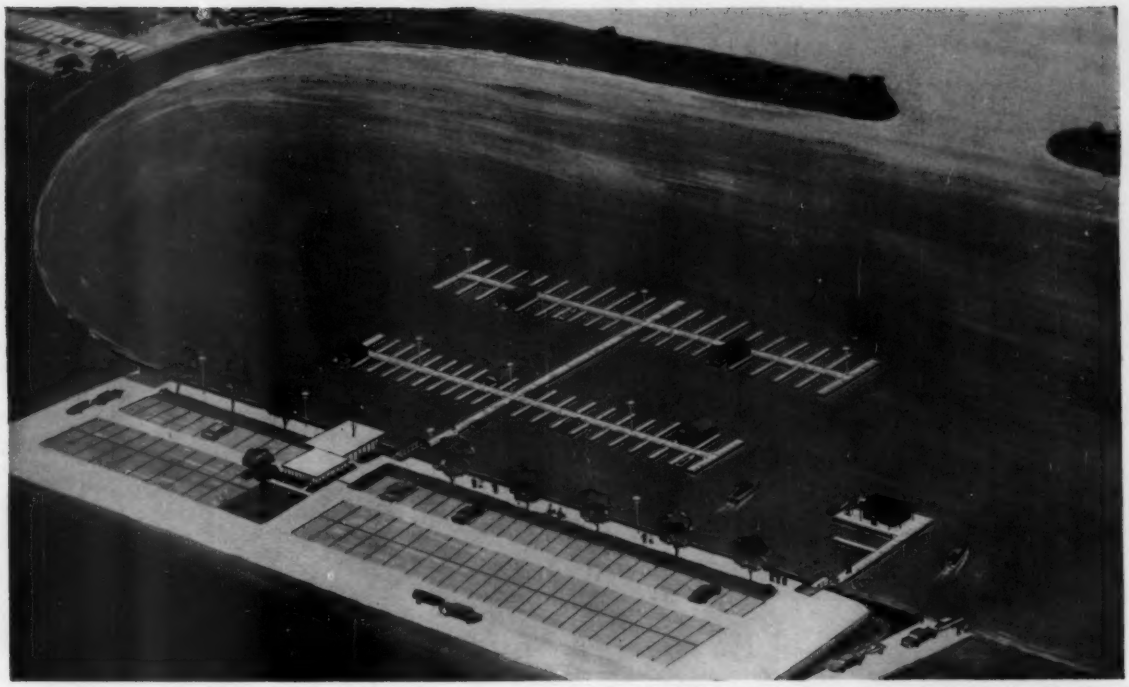
AC-9

CONVEYCO

MOBIL SWEEPER®

DIVISION OF THE CONVEYOR CO.

3260 E. SLAUSON AVE. LOS ANGELES 58, CALIF.



This shows the first stage in Peoria's new marina development.

Peoria's New Marina and Playground

By **RHODELL E. OWENS**
Director of Parks
Peoria, Ill.

The Peoria Park District is now constructing a 50-acre marina and playground on the Illinois River.

The recent demand created by the tremendous number of boaters in the Peoria area made it imperative that the Park District enter the boating field. Peoria has known for some time that present boating facilities were inadequate. Fortunately, the opportunity to provide these facilities was finally made possible by a trust fund set up by a donor for that specific purpose. The Peoria Park District was chosen to develop and manage a marina by the officers of the trust who will make available approximately $300,000 for this purpose.

The Peoria Park District serves a metropolitan population of about 200,000 people. The District is bounded on the east by the Illinois River which affords excellent opportunities for the District to acquire riverfront property. It now holds approximately one mile of such frontage in addition to the site now under development. The marina, now under construction, is located on Lake Peoria (a very wide section of the Illinois) at the northern end of the City of Peoria. The site offers the best boating in central Illinois.

The first phase of construction will provide a launching ramp and dock facilities for approximately 100 boats. As these dock facilities are filled, more will be added each year until eventually we will have accommodations for approximately 500 boats. The master plan now envisions a winter storage area and boat lift, a boat repair building, clubhouse and ample parking lots to serve all of these facilities. The sale of gasoline, oil, minor repairs and refreshments will be carried on at a floating courtesy dock.

Plans have been made for rides for the public in a large pleasure craft which will accommodate 25 to 30 passengers. The boat will be operated during the afternoons and evenings and passengers will board it at the courtesy dock.

All docks, slips and the courtesy dock were installed by the Standard Steel Products Mfg. Co., of Milwaukee, Wisconsin at an approximate cost of $50,000.

After considering several types of construction, the Park District chose this company's floating docks and slips for several important reasons. First, they are far more attractive than the old wooden docks. Next, the interchangeable modular construction permits greater flexibility to provide for future expansion, changes, and rearrangement for varying boat sizes. In addition, new specially designed steel pontoons are used to eliminate the old steel drums and their costly maintenance and repair.

Deck surfaces are heavy steel, embossed and finished in a special abrasive paint for complete non-skid safety, even when wet. Slips will be arranged along both sides of floating docks totaling more than 256 feet in overall length, which is probably the largest on the Illinois.

Access to the marina is provided for by a steel runway secured to the shore. A specially designed self-leveling stairway is installed at the end of this runway. This stairway moves up and down on the

MOBILE AS A TRUCK — Here's another trencher for city work. Rubber-tired Trenchmobile® drives around town at 12.6 m.p.h. No waiting for trailer, loading or unloading delays. It's heavy-duty, fits a wide range of applications. Digs 8 to 16 inches wide, 5 feet deep — at speeds up to 14.5 feet per minute. Handles main-line extensions, utility service connections, underground signal and lighting systems. (For largest sewers and mains, check Parsons line of big, crawler Trenchliners® — wheel and ladder-types.)

. . . . . PARSONS CO., Newton, Iowa . . . . . .

Send us bulletins on: ☐ *88 Trenchmobile* ☐ *155 Trenchliner*

NAME_____

TITLE_____

DEPARTMENT_____

STREET_____

CITY, STATE_____ P823AC

Compact, low and narrow

Look at the low profile of this small Parsons 155 Trenchliner! It's a new size — developed especially for city digging. Height is only 7 feet-4 inches for working under trees, overhanging branches, and other overhead obstructions where larger trenchers can't go. Width over crawlers is only 5 feet-4 inches for operating between buildings, in narrow alleys. Power-shift conveyor avoids side obstructions, places spoil bank on either side of trench.

Digs trench 10 feet deep

For all its compactness and maneuverability, this utility-size 155 has plenty of work capacity. It digs 16 to 26 inches wide, at depths to 10 feet — produces from 5.8 inches to 25 feet of trench per minute. Low speeds let the 155 "inch" its way past cross-pipes, and other obstructions typical of city digging. High speeds give maximum feet per minute on clear right-of-way.

Sloping ladder-boom has positive down-crowd — starts cut fast, holds accurate grade. It undercuts walks, curbs, gutters — makes vertical set-ins flush with walls, existing mains. Heavy-duty 155 also has: cast-steel buckets, "Tap-In" teeth, tractor-type crawlers with 16-in. grouser treads, or 12-in. flat shoes. Call Parsons distributor today for complete facts, or write for bulletin.

PARSONS COMPANY • NEWTON, IOWA
(Division of Koehring Co.)

holds approximately one mile of dock were installed by the Standard way moves up and down on the floating dock with every change in the water level, providing safe and comfortable footing at all times.

Much of the land area has been made with earth secured from nearby super-highways and from contractors' excess excavation materterial.

At the present, a city refuse landfill operation is producing five or six additional acres at the northern end of the harbor for building and parking areas. This landfill operation will continue until all the necessary land is brought to a height well above flood stage. Landfill operations will not in any way hinder the partial operation of the harbor during its formative years.

The plans call for the landscaping of the entire area and the establishment of picnic grounds at the extreme lower end of the harbor area.

Playground equipment will be placed on the sand beach near the launching ramp providing mothers an opportunity to keep their small fry entertained while Dad works on the boat or the rest of the family are out water skiing.

Fees and Charges

Fees and charges have been established for the 1959 season as follows:

Slip Rental

Boats under 18'	$ 75 per season
" 18' to 24'	100 " "
" 24' and over	150 " "

Anchorage

All boats $7 per month
Trailer and boat parking, $7 per mo.

Beaching

All boats $7 per month

Launching Ramp

For all those not holding season or monthly rentals, 50c per launching

The docks will be served by fresh water and electrical outlets conveniently located for use by those renting slips.

Budget

The budget for the first year calls for approximately $100,000 for construction. Total expected revenue is $27,000 with an expenditure of approximately $21,000. All revenue over costs will revert to the Trust Fund to be used for future construction.

FITCHBURG CHIPPER

"OPERATES 1693 HOURS without a breakdown of any kind!"

WELDON S. CAMPBELL
64 MUNSON STREET
GREENFIELD, MASSACHUSETTS

February 4, 1958

Fitchburg Engineering Corporation
Fitchburg, Mass.
Mr. Perini, Superintendent

Dear Sir:

On March 23, 1955, we purchased one of your Chippers. You may be interested to know that this machine operated a total of 1,693 hours without a breakdown of any kind. Inasmuch as we are paid for running time only we often start up the chipper 20 or more times daily.

We have followed faithfully your instructions in using a hone on the knives each morning, we find that by doing this we can use the knives for five weeks before sharpening. Even then only about 12 thousands are needed to bring them back.

Contractors find your chipper is ideal and saves them much time and dollars in clearing a woodland area before bull dozing begins.

Your Engineering skill and knowhow has resulted in the finest of all Chippers and I have seen them all in operation.

Hauling time is reduced two-thirds, this results in a large saving in gasoline, parts and labor. I would never again be without one.

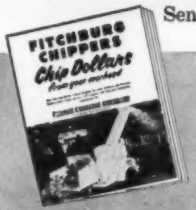
Respectfully,
Weldon S. Campbell
Weldon S. Campbell
Tree Warden & Moth Supt.
Greenfield, Mass.

Fitchburg Wood Chippers are engineered to stand hard use, to give long service without excessive maintenance costs.

That's the "reason why" successful men like Weldon Campbell prefer Fitchburg for the tough brush removal jobs.

Fitchburg Chippers are designed by engineers for busy, trouble-free service. The exclusive spring-activated feed plate adjusts itself automatically—provides protection from damaging foreign material—assures smooth, efficient operation. The power take-off clutch gives safe starts and stops. There's no fly wheel to cause bearing trouble. These features keep a Fitchburg Chipper on the job . . . save you time and money.

Send for a copy of "Chip Dollars From Your Overhead."



NEW FREE BOOK
"Chip Dollars From Your Overhead"
Complete with cutaway color drawings of Chipper in action. Specifications, etc.

FITCHBURG ENGINEERING CORPORATION
Fitchburg, Massachusetts, Dept. AC-99,
Send my free copy of "Chip Dollars From Your Overhead" to:
Name _____
_____
(Position or Company)
Address _____
City _____ State _____

FITCHBURG ENGINEERING CORPORATION
FITCHBURG, MASSACHUSETTS

KENNEDY'S NEW K-10 FIRE HYDRANT

Absolute minimum of parts "O" Ring Seal construction...

KENNEDY'S new K-10 Fire Hydrant contains an absolute minimum number of parts! All working parts can easily be removed for maintenance or repair without excavation.

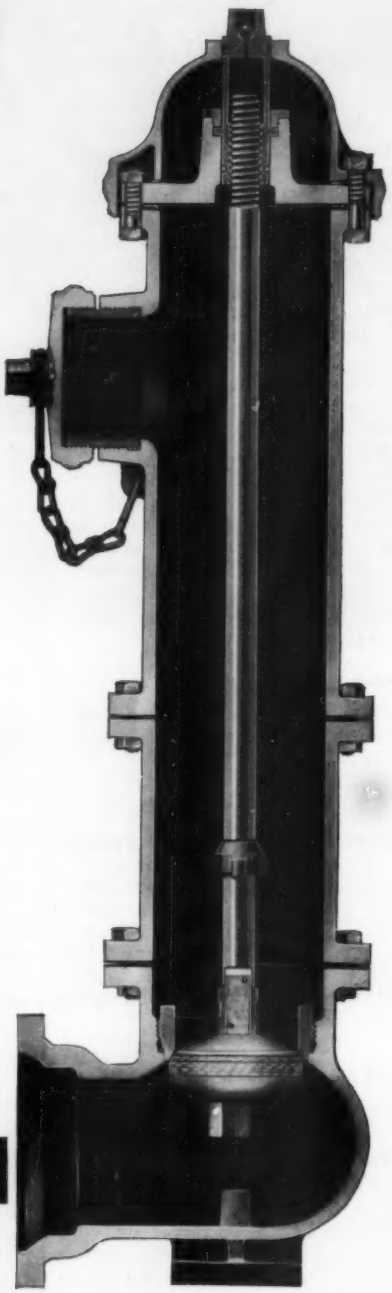
Another feature is "O" Ring Seal construction, a weather seal and a pressure seal. These seals eliminate packings which deteriorate, then loosen and allow water, dirt, snow or moisture to seep in. "O" Ring sealing assures clean, absolute protection of the inside parts.

Ruggedly constructed, the K-10 Hydrant also features straight line operation and reaches a new high in working efficiency with smooth, large area internal passageways and bell shaped entrances to nozzles, providing low friction which means minimum pressure loss.

These combined features assure long, trouble-free service and substantially reduce maintenance costs.

The KENNEDY K-10 Hydrant conforms to all specifications required by the A.W.W.A. and is manufactured in three sizes: 4, 4½ and 5 inch with a wide variety of pipe end connections to meet every need.

• *Write for new Hydrant Bulletin No. 591*

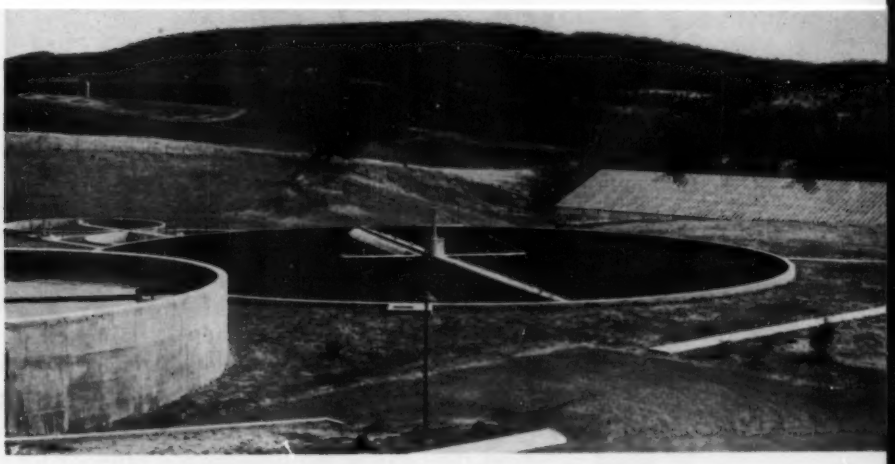


KENNEDY'S NEW
K-10 FIRE HYDRANT

KENNEDY VALVE MFG. CO.
ELMIRA, NEW YORK

• OFFICE AND WAREHOUSES IN PRINCIPAL CITIES

DUCTILE IRON VALVES • CAST IRON VALVES • BRONZE VALVES • INDICATOR POSTS • FIRE HYDRANTS



This view from the digester shows the single filter, covered sludge beds (right), part of one primary clarifier (left), and the final clarifiers in the background. Original grading and spacing permits the addition of more units when they are needed.

Charlottesville, Va. fulfills its obligation toward water pollution control with . . .

One Plant Completed and One Under Construction

By **CECIL G. HANEY**
Superintendent
Water-Sewage Treatment
Charlottesville, Va.

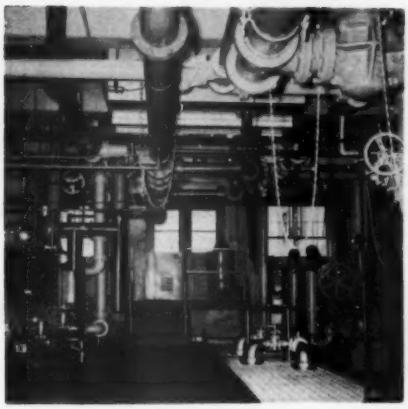
Just as our citizens are asked to keep the countryside green, so are the cities asked to keep the streams clean. One person can start a fire that will destroy the efforts of thousands. Likewise, one city can nullify the efforts of many. The answer to the problem is that each city must assume responsibility and to this end Charlottesville has taken steps to provide the facilities to treat all sewage from within its corporate limits. We will reach this goal next year upon the completion of our second sewage treatment plant.

Our two plants are of the trickling filter type and will be essentially the same except for the degree of treatment provided. The plant now in service provides primary filtration only—followed by final clarification. The Moores Creek plant now under construction will have both primary and secondary filters in operation.

The table on page 225 shows the design data for both plants. The following description is of the Meadow Creek Plant which went into operation in June, 1957. It replaced an obsolete Imhoff tank and presently serves a population of about 18,000. Its average flow is 1.2 to 1.3 mgd. Joe Keller is the chief operator.

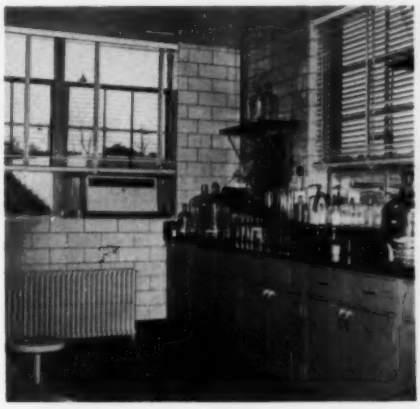
Sewage enters the plant by gravity through a 36-inch sewer, passes through a 24-inch-wide Chicago Pump Barminutor, then through the grit chamber equipped with a single aerator unit, and into the pump well. Three pumps lift the sewage to the primary clarifiers. From this point it flows through the plant by gravity. The three pumps, all Chicago Pump Company units, are each rated at 1,400 gpm and are driven by 25 hp U. S. Motors. Space has been provided for a fourth unit.

The pump house also contains two Builders-Providence indicating, recording and totalizing instruments, one to measure raw sewage entering



Left:
The sludge pumps and heat exchanger are located in the control house connecting the two digesters. Excellent housekeeping is practiced throughout the plant.

Right:
This air-conditioned, fully equipped laboratory provides an important function toward efficient plant operation.



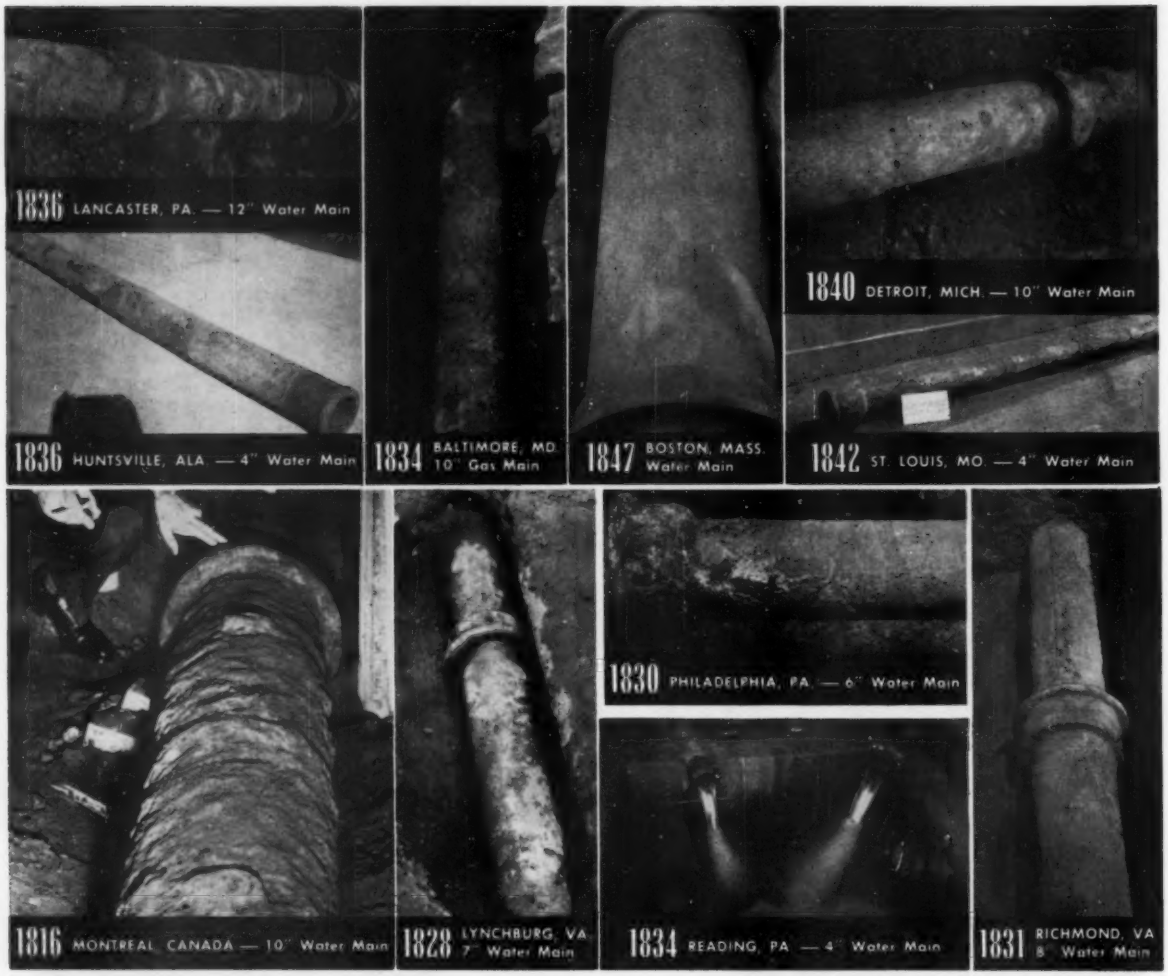
Here Is "Ordinary Rustable"

CAST IRON PIPE

In Service for a Century or More

It has been stated by some companies manufacturing pipe that is allegedly competitive with cast iron that "ordinary cast iron pipe is rustable."

The fact is that cast iron pipe takes on a protective coating of oxidation, which preserves the body of the pipe for a century or longer. Pictured here are a few of more than 100 American installations of cast iron pipe that have been in service in water and gas mains for 100 years or more.


1836 LANCASTER, PA. — 12" Water Main
1836 HUNTSVILLE, ALA. — 4" Water Main
1834 BALTIMORE, MD. 10" Gas Main
1847 BOSTON, MASS. Water Main
1840 DETROIT, MICH. — 10" Water Main
1842 ST. LOUIS, MO. — 4" Water Main
1816 MONTREAL, CANADA — 10" Water Main
1828 LYNCHBURG, VA. 7" Water Main
1830 PHILADELPHIA, PA. — 6" Water Main
1834 READING, PA. — 4" Water Main
1831 RICHMOND, VA. 8" Water Main

This advertisement is published by Woodward Iron Company, Woodward, Ala., in the interests of the Cast Iron Pipe industry, which it has long been privileged to serve with quality iron from which quality cast iron pipe is made.

WOODWARD IRON COMPANY

Since 1882

WOODWARD, ALABAMA

the plant and one to measure recirculated sewage returning to the raw sewage pump well from the final clarifiers by gravity. At present our recirculation averages around 500,000 gpd.

Three float controls set at low, medium and high water in the well control the pumps. These can be interchanged to operate any pump to provide even wear on all the units.

The two primary tanks are each 60 feet in diameter with an 8-foot-10-inch side water depth. The final clarifiers are also each 60 feet in diameter but with a 6-foot side water depth.

The Meadow Creek Plant provides primary filtration only, utilizing a single filter 115 feet in diameter and containing six feet of rock media.

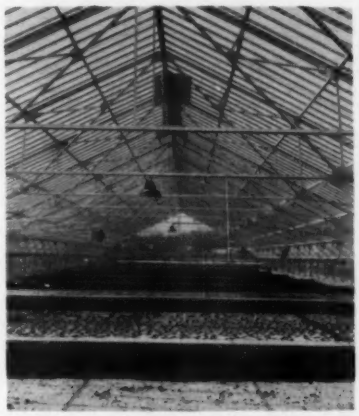
Sludge Digestion

Sludge digestion takes place in two tanks each 45 feet in diameter. The primary digester has a side wall depth of 21.5 feet and is equipped with a fixed cover, scum rake and mixer. The secondary digester has a 20½-foot side wall depth and is equipped with a floating cover. Digester contents are heated by means of a Pacific Flush Tank heat exchanger. Dorr-Oliver supplied the covers, scum rake, mixer and all mechanical equipment for the clarifiers and filter. Additional equipment includes Varec gas safety equipment, Rockwell Nordstrom and ACF plug valves, and two Carter Simplex sludge pumps, each rated at 75 gpm.

The contents of the primary digester recirculate through the heat exchanger at the rate of 150 gpm. They are taken from the bottom and enter the digester either from the side at the mid-point or from the top.

Covered Sludge Beds

The plant as constructed contains a chlorine contact basin with provision to add chlorine just ahead of the basin. However, we find it advantageous to add chlorine at the distribution box ahead of the final clarifiers rather than just ahead of the contact basin. This provides a longer detention period and also eliminates the possibility of short circuiting in the contact basin.



Glass-covered sludge beds with motor-driven fans in the roof promote sludge drying. The sludge conveyor can be seen in the background.

The chlorinator, a 400-pound-per-day Wallace & Tiernan unit, is located in a separate room in the raw sewage pump house. Ton containers are used for the chlorine supply. Pre-chlorination can also be practiced by adding chlorine to the sewage in the pump well. The final effluent flows into Meadow Creek and then to the Rivannia River.

The eight sludge drying beds, each 30 feet by 50 feet in size, are set in a single row and covered by a structure similar to a greenhouse. This structure has a framework of redwood whereas the new plant will have one made of aluminum. It differs from most sludge bed enclosures in that it contains four forced draft fans mounted along the ridge of the roof. These expel the moist air to promote more rapid drying of the sludge.

A Link-Belt conveyor with an 18-inch-wide belt spans the beds. It is mounted on rails along each side of the beds and can be pushed from one bed to the next. The dried sludge is shoveled onto the conveyor belt and is carried to one side of the building and discharged through a window into a truck bed.

One useful item would be a sludge grinder attached to the end of the belt to grind the sludge before it is deposited into the truck. We do have a small Royer grinder but this requires handling the sludge a second time. At present the city uses all sludge on various public properties.

Low Cost Financing

The Meadow Creek plant and necessary trunk mains were financed by means of a $1,200,000 bond issue sold in March 1955 at an interest rate of 1.796%. Charlottesville is one of the few cities in the entire country that enjoys a triple A credit rating, and this pays dividends in the form of low interest rates.

The Moores Creek plant and its trunk lines will cost about $1,100,000. The necessary funds for this plant will come from three sources—a $212,000 federal grant; $388,000 from a reserve fund; and a bond issue of $500,000 still to be sold.

Plans and specifications for both plants were prepared by the firm of Polglaze and Basenberg, consultant engineers of Birmingham, Ala., who are also supervising construction. The entire program is being conducted under the administration of the city manager, James E. Bowen, Jr.

SEWAGE TREATMENT PLANT DESIGN DATA

Item	Meadow Creek Plant	Moores Creek Plant
1972 Design Population	22,892	19,117
Per Capita Contribution (gpd)	125	125
Plant Capacity (mgd)	2.86	2.65
Grid Basin (detention minutes)	1.0	1.0
Primary Clarifier (detention in hours based on average daily flow received in 18 hours)	2.0	2.0
Primary Filter (loading in mg/acre/day)	17	23
(BOD loading lb./cu. yd. stone)	1.5	1.5
Secondary Filter (mg/acre/day)		17
(BOD loading lb./cu. yd. stone)		0.4
Final Clarifiers	Same as Primary	Same as Primary
Drying Beds (sq. ft./capita)	0.75	0.75
Sludge Digestion Tanks (cu. ft./capita)	3.0	3.0

This is the National bookkeeping machine on which Mrs. Laura Karns prepares the semi-monthly payroll; types records for budgetary control; and reports monthly on the condition of the budget.

Grove City Mechanizes Accounting

By **RALPH E. CANNON**
Borough Secretary
Grove City, Pa.

Mechanized accounting has been adopted by the Borough of Grove City, Pa., with the installation of a National Class 32 bookkeeping machine. The new office unit is a combination of a ten-total adding machine and an electric typewriter, with separate control bars having various stops set for performing the different functions.

Bank deposit receipts or voucher checks are written in duplicate at the same time that corresponding cash receipts or disbursement entries are recorded on monthly journal sheets. Total amounts on each transaction are distributed to the departments of general government, and to the electric and water utilities which are operated by the borough.

The payroll procedure consists of the typing of stub-attached pay checks and individual yearly ledger records. A journal, listing all employees for each pay period, is prepared simultaneously. Earnings, withheld income tax payments, and social security deductions are recorded and accumulated for required reports.

Records for budgetary control are compiled on separate revenue and appropriation ledger sheets for all budget accounts, along with related journals for each of the three departments. Automatic computations are shown on both records for monthly totals, yearly totals and budget balances.

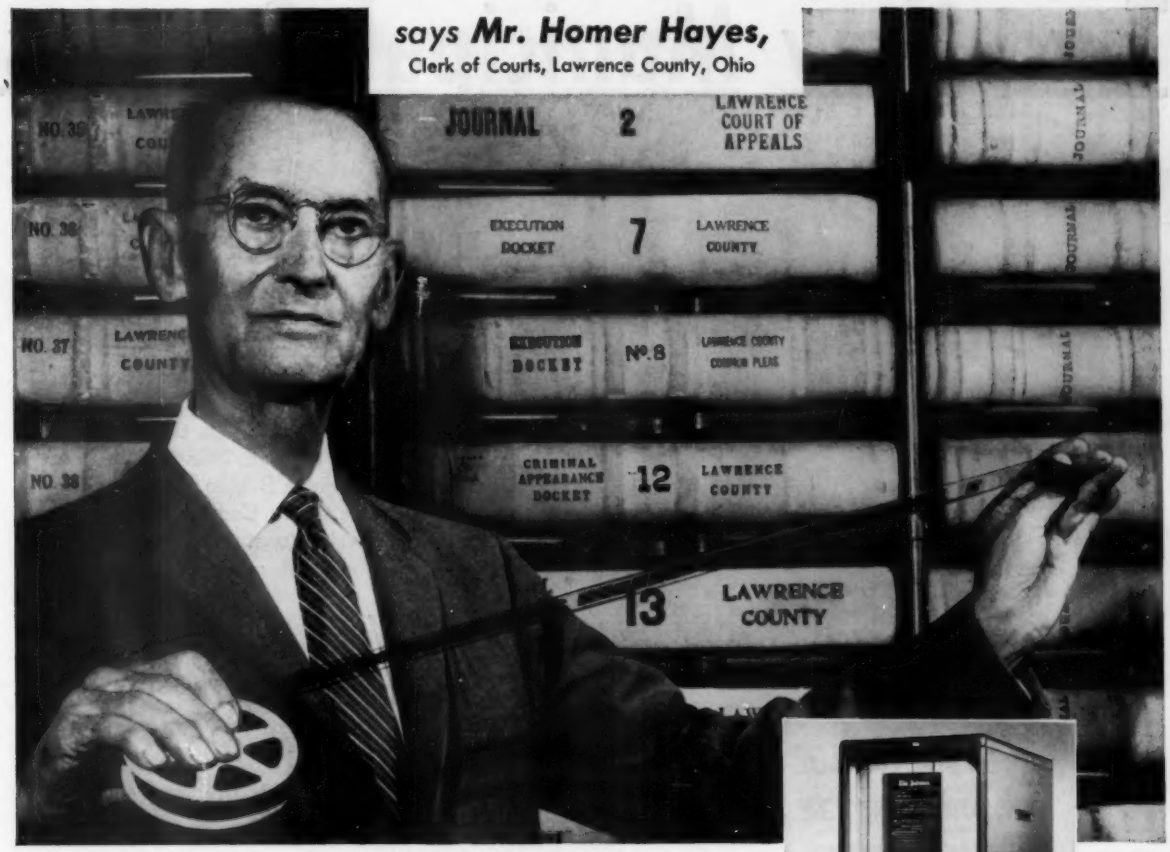
Monthly departmental budget reports are duplicated from a ditto masterset, which is inserted in the machine for typing the budget code, description, budget total, year's total to date, and the budget balance. These reports are prepared for the study of councilmen and officials.

The final accounting procedure is posting the totals from the cash and budget journals to the general ledger, which comprises numbered and classified asset and liability accounts. From these summary figures a general journal for the month is produced as a byproduct of the accounting operation.

An important feature of this equipment is an automatic showing of a zero proof, or the amount of any error, at the end of each item line, which verifies the accuracy of the work. The machine process assures an efficient and complete system of accounting and provides for better management control of the borough's finances.

"Recordak Microfilming makes bound volumes of court cases as outdated as the horse and buggy!"

says **Mr. Homer Hayes,**
Clerk of Courts, Lawrence County, Ohio


JOURNAL 2 LAWRENCE COURT OF APPEALS
EXECUTION DOCKET 7 LAWRENCE COUNTY
DOCKET No. 8
CRIMINAL APPEARANCE DOCKET 12 LAWRENCE COUNTY
13 LAWRENCE COUNTY

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U. S. PARKING ANNOUNCES Two New Municipal Garages

Architects drawing of New Bowser Elevator Garage in Boston

BOWSER ELEVATOR GARAGE

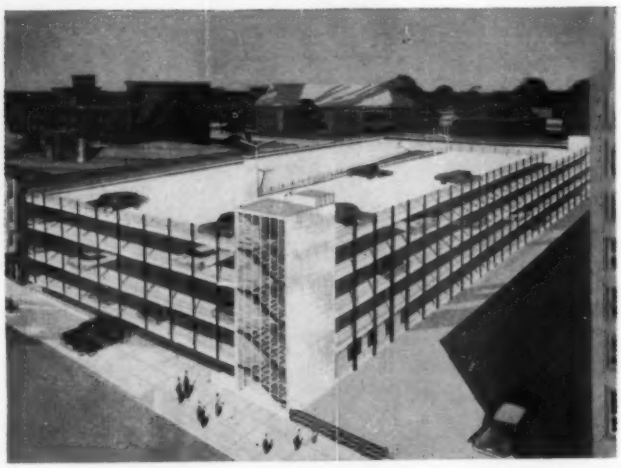
BOSTON

Bowser Parking System, Inc., Subsidiary of U. S. Parking, was awarded contract for the new parking facility to be constructed at Central and Kilby Streets, in the heart of Boston's financial district. This will be the fifth Bowser garage in Boston. Architects & Engineers: M. A. Dyer Company. General Contractors: Park Construction Co., Inc.

RAMP GARAGE

ASBURY PARK, N. J.

Financed and constructed by U. S. Parking Corp. for the Parking Authority of the City of Asbury Park. U. S. Parking worked out the financing plan through a parking revenue bond issue and purchased the entire issue. U. S. Parking Corp. has now begun construction of the garage to be paid for by the city out of bond proceeds. Engineers: Gage & Martinson. General Contractors: U. S. Parking Corp.



Architects drawing of New Ramp Garage in Asbury Park

USP

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103 Park Avenue **New York 17, N. Y.**
Subsidiary: Bowser Parking System, Inc.
New York Des Moines

What Is Happening To Real Estate Values and Assessments?

By PERCY R. WILLIAMS*

The answer to the question posed in the title is obvious, but to say nothing more than "up" is to be superficial. Building values certainly have increased. But how do they compare with land values?

Pittsburgh has a special interest in this question. Under the city's Graded Tax Plan, land is a major source of public revenue. The tax rate on buildings is only one-half of the land rate, in pursuance of a policy designed to encourage private improvements of all kinds.

Consequently, the city undertook to discover whether assessments actually reflected present land and building values in Pittsburgh. And at the same time a general survey of real estate values in other communities was undertaken with the cooperation of assessing officers in 500 American cities and towns throughout the 48 states.

While the early returns from the larger cities were sufficient to indicate the general trend of values and assessments, the facts and figures reported from all sections of the country were so interesting that it was thought worthwhile to pursue the matter far enough to get a comprehensive picture of the situation throughout the United States

Because we were interested primarily in recent trends, we selected the years 1940-1956 for study. Happily for us, in the great majority of cases the assessors could report separate land and building valuation totals as far back as 1940. Since assessments generally hit their low point about 1940, the survey disclosed how much they had risen from this bed-rock point in 16 years.

The most striking change revealed is the great difference in the respective ratios of land and building values.

Surveys made prior to 1930 had indicated that urban land values generally represented about 60% and building values about 40% of the total urban real estate value. Some years later, land and building values commonly were approximately equal. Now we find that building valuations may be as high as 70% and land valuations as low as 30%. Is this due to a neglect to revise land values upward, or does it reflect the actual situation as to relative values?

Deflation and inflation have contributed to the confusion in standards of valuation. Many communities make no pretense of assessing real estate at its full market value. But many do aim to make their assessments conform to some percentage of full value.

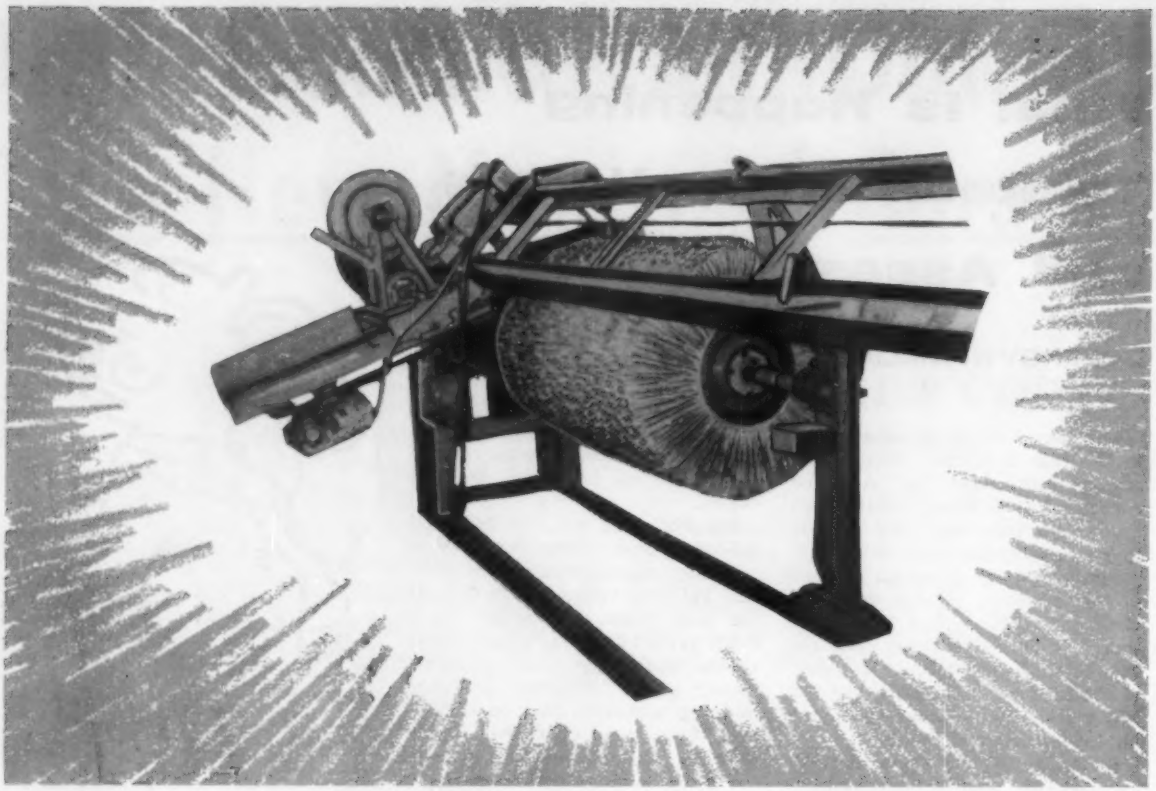
If assessed valuations reflect market value in any degree, as they must in a survey that is national in scope (due allowance being made for assessments made at various percentages of full value), it will be seen that land values are not increasing nearly as much as building values, or as the general commodity price level. Land values have definitely increased where population has materially increased. But building valuations have multiplied not only where population has increased but also where population is almost stationary.

The reason for this is that the cost of labor and materials has increased greatly, which is reflected in the value of the buildings, whereas these costs do not enter into the land value. New buildings are constantly being erected and added to the assessment rolls, whereas in most cases there is little, if any, addition to the amount of land embraced in the total assessment. In exceptional cases, cities have made very substantial annexations of surrounding territory.

Besides the added value of the newly-erected buildings there is the factor of the replacement cost of building, which has at least doubled in recent years. Where assessors take present building costs into consideration, there has been in many cases an upward revision of valuations applied to all buildings, both old and new, based on the cost of replacement, less depreciation.

In a number of communities there has been a definite and extensive upward revision of assessments but this does not seem to be true in many cities of the largest group in population. However, a high per-capita valuation is one of the best indications that assessors are recognizing the higher market values now prevailing and some of the larger

* The writer was a member of the Pittsburgh Board of Assessors during the years 1922-25, inclusive; he was Chairman of the Pittsburgh Board of Assessors from 1934 to 1942 (when the City Board was discontinued). Since 1952 he has been Real Estate Assessment Consultant for the City of Pittsburgh.



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cities do show high per capita valuations of both the land and the buildings.

Erie, Pa. and Richmond, Va. are excellent examples of revaluation by assessors. Erie's recent revaluation from a 1932 base to a 1952 base raised the assessment rolls from $165 million to $380 million, a 130.3% increase in one year. Erie now shows one of the highest per capita valuations due to the fact that the "actual value" basis has been applied as required by Pennsylvania law.

Erie makes its assessment through its own city assessment board, which simplified the task of revaluation. It is interesting to observe that the great majority of the cities have their own assessors directly reporting to the municipal government. This is generally true throughout New York, New Jersey, Pennsylvania, Massachusetts, Connecticut, Rhode Island, Virginia, Michigan, Wisconsin and Florida, though there are some local exceptions.

While it is true that many of the older cities are not growing substantially in population or in real estate values (particularly in land values), the picture would be very different if, with the trend of population to the suburbs, the central city were to annex even a part of its suburban areas, as has been done in the case of some large cities in the West and South.

Land Assessment

Probably the average land assessment does not exceed 50% of actual value; sometimes the ratio is much lower and sometimes much higher. Under present conditions it appears equally true that the average building assessment does not exceed 50% of actual value, even though there has been a strong upward trend in total building assessments in most cities and though many cities are now assessing buildings at a higher ratio in an effort to keep pace with the great increase in building costs.

The demand for equalization of assessments is growing and many cities and towns are responding to this demand either by complete or partial revaluation. This is the prime essential and can best be attained by a firm determination to assess all real estate at its full market value, which would appear to be the natural and normal thing to do. A realistic valuation is the key to all sound assessing and it is in the best interests of all those concerned.

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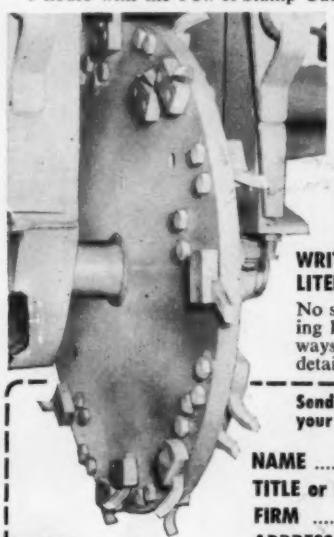

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in Cleveland, Ohio, NEW TRANSIT STATIONS HELP

Feeder bus lines, new station parking lots and frequent schedules are three reasons why rapid transit is keeping 5926 automobiles from choking the streets and parking lots of downtown Cleveland. Surveys show that 70% of the present riders who leave their cars in station lots are new users of rapid transit.

So successful is the coordination among bus line, parking lot and rapid transit, that the Cleveland Transit System recently added two new stations —West Park and Triskett. Already this 1.9-mile extension is largely responsible for the 21.4% increase in the System's rapid transit rider volume over a 3-year period. Here is positive proof that rapid transit works.

During inbound morning rush hours, 17 trains running on frequent schedules handle approximately 15,000 riders. Expansion plans now under way to add over 1600 parking spaces at West Park and Triskett Stations will increase this total considerably.

In addition to easing traffic and parking tie-ups downtown, rapid transit saves significant travel time and expense. For example, from the area of the new West Park Station, automobile trip time has been clocked under *ideal* conditions of weather and traffic at 22 minutes in the rush hour. The same trip on rapid transit, regardless of weather or traffic jams, is 15 minutes—a saving of 30% in time alone. Add to this the personal fatigue of driving, the cost of automobile maintenance and parking, and you have the reasons why so many more Clevelanders are riding on rapid transit!

If your city is plagued by traffic snarls, inadequate parking and loss of business and revenue, it's time to review your public transportation facilities. Chances are, you'll find rapid transit is the answer to bringing people and business back to your urban centers. J-15014

YOU CAN BE SURE...IF IT'S Westinghouse

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Windermere Terminal. Four bus loops provide easy transfer to and from rapid transit. Four parking lots contain a total of 947 automobile spaces.

West 117th-Madison Bus Terminal adjacent to station provides quick, convenient transfer to and from rapid transit trains. Facilities such as these cut commuting time by 30% and more . . . help keep autos from strangling downtown traffic.

West Park Station. Fifteen hundred parking spaces will be increased to 2500 spaces in the near future. Note special drive-through area for pickup and dropoff of passengers driven by auto to station. Connecting bus lines provide continuous transportation to all parts of the city from all stations.

This 129-x-180-foot gymnasium, using rigid-frame steel trusses, goes heavy on recreational usefulness, light on the budget.

Pre-Engineered Metal Park Buildings

. . . provide thrifty recreational structures adapted to individual local requirements

By **GILBERT LEACH**
Metal Bldg. Mfrs. Assn.
Cleveland, Ohio

An economical answer to rising building costs is the adaptation of individually designed structures around basic pre-engineered metal structures. Structural steel frames and metal covering permit the architect to endow the completed structure with a distinctive beauty in keeping with other architecture within the community, while getting the benefit of mass-produced material.

Steel has great toughness. In the recent Cameron, La. hurricane which cost more than 500 lives, the winds and tidal wave either completely demolished or moved from its foundation every building not supported by structural steel. In one case of a gymnasium supported by steel, the front masonry wall collapsed, but there was no other major damage. There were five pre-engineered steel buildings, four with corrugated metal walls and one with corrugated asbestos, which did not lose a sheet from the hurricane wind or tidal wave. Thus, the safety which steel provides is an important factor in any building used for public assembly of any sort.

Steel is no longer a raw material to be fashioned or fabricated at the job site. Rather it is a great catalogue of prefabricated, shop-welded components, ready for field bolting in the same manner that sashes, doors or other manufactured accessories are installed.

Steel permits wide open spans without a heavy cost premium, permitting unobstructed free use of all covered space. The increasing popularity of rigid-frame construction, where all of the bracing is in the plane of the roof, reduces the required height of side walls in gymnasiums, where the 22-foot clearance is required above the boundary of a basketball court. Thus, with the spectator seats on each side of a 4-on-12-pitch building the necessary clearance can be attained in 16 to 20 feet of side wall, depending upon the over-all width of the building. In one case, a 120-foot clear span rigid frame building was used and four regulation basketball courts were installed with the baskets being placed across the width of the building.

Metal buildings are available in a wide range of colors which may be either factory or field applied. Combinations of these colored panels with glass, stone, wood or brick provide the architect with unlimited treatments and are acceptable under many zoning regulations which exclude galvanized corrugated metal.

Where desirable, low profile roof buildings are now available. Where air conditioning and heat are required, the low profile reduces the cost of temperature control without installing the more expensive drop ceiling.

The large variety of widths and heights of pre-designed metal buildings gives the architect an almost unlimited selection from which to choose. Most of the established pre-engineered metal building manufacturers have stock heights of 10 to 20 feet and clear span widths ranging from 20 to 100 feet. The usual 20-foot bay spacing would of course

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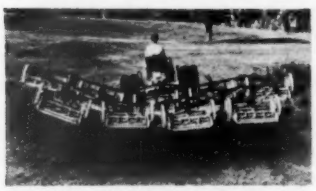
With the Worthington Model "F" Tractor and "Wing-Lift" hydraulic control you can now mow in areas previously cut with a power mower. "Wing-Lift" offers a choice of either three, four or five cutting units at the touch of your hand.



The Model "G" Tractor is truly a unit that can go everywhere and mow everywhere. Geared specifically for mowing, the Model "G" has power to spare. It can pull 9-gang units in areas inaccessible to other tractors.

Now here's a tractor that combines all the advantages of the famous Worthington Model "G" Tractor with the utility and carrying capacity of a light truck—the "Utility" Dump Body Tractor.

Try this unique new unit on your own grounds and see how it can pull gang mowers, carry dirt, sand, fertilizer or tools, making it an all purpose tractor for turf use. Notice how easy it is to lift equipment in and out of the body that is *only 23½ inches from the ground!* Here's a tractor that's just made to take the back ache out of large area grass maintenance.

It's easy to arrange for a "NO OBLIGATION" demonstration and job test Worthington on your own grounds. Your authorized Worthington Dealer will help you select the right equipment to answer your turf maintenance problems. Just use the coupon below to arrange an on-the-job test or request complete literature.

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Pre-engineered metal buildings manufactured by members of the Metal Building Manufacturers' Association are designed to meet requirements of the local building codes.

Some of the more widely adopted codes are the National, the Uniform, and the Southern Standard Building Code.

To assist architects in determining the adequacy of metal buildings to meet these code requirements, all members of the Metal Building Manufacturers' Association are prepared to submit bending stress diagrams or calculations on their buildings.

The use of structural steel columns precludes the necessity of costly load-bearing masonry walls. Corrugated steel side walls, even with insulation and fibre or gypsum board nailers, are less expensive than masonry walls. For example, corrugated metal with 1½-inch foil-backed fiber glass insulation is equal in effectiveness to 12 inches of masonry, ½-inch insulation board and ½-inch plaster, but costs only ½ to ⅔ as much, depending upon the type of masonry. However, depending upon the budget, concrete block, tile, tilt-up slab or brick can easily be adapted. In any event, the finished structure is fire resistant, more vermin-proof and is basically stronger than any other type of structure of the same size.

Tacoma's New County-City Building

When Tacoma and Pierce County dedicated their majestic $9,700,000 County-City Building they culminated six years of planning and construction. The new building contains 272,934 square feet of building space on a site area of 383,000 square feet. The central building and the law-enforcement wings are structural steel buildings and the court wing is of reinforced concrete. Windows are mounted in aluminum metal skin-walls. The outside of the building is of architectural concrete finish. There will be 604 parking spaces on grade level and in the two reinforced concrete garages. Both the garage space and the central building and law-enforcement wings are built for convenient expansion to meet future needs. The jail, which occupies the upper two floors of the law-enforcement wing, is built according to the latest recommendations of the Federal Bureau of Investigation.

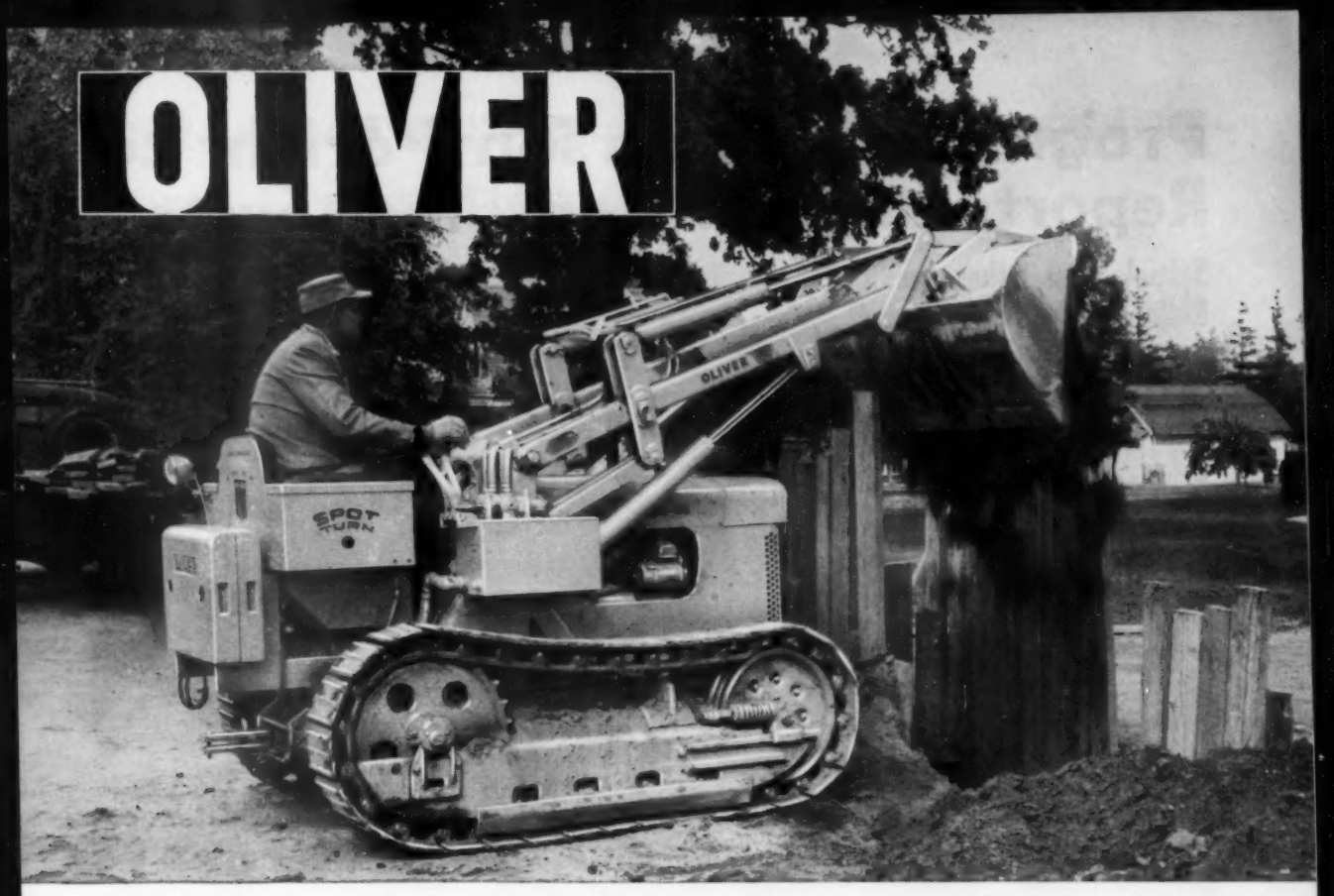
The new County-City Building boasts the most complex and up-to-date telephone switchboard in this region. All personnel can be reached by dialing one outside number FU 3-3311.

The building will be heated by steam, supplied by the local heating utility. Air conditioning for the entire structure is provided by the ventilating plant on the 9th floor of the main structure. Elevators include four passenger and one freight elevator in the central building and two passenger elevators in the four-story law-enforcement wing.

Focal point for the building's operation is the mechanical room located in the basement of the central structure. Nerve center of the building is the electronics equipment control panel, located in the mechanical room, which synchronizes clocks throughout the building hourly, maintains day and night temperatures, operates the visual intercom paging system and automatically turns corridor, lobby and outdoor lights off and on. Exact temperature readings in any given room can be taken on this panel as required.

Four years ago, largely through cooperative efforts of a committee of city councilmen and county commissioners, a lease pact was signed. The lease agreement gave the city a 99-year tenancy, sharing maintenance and operation on a basis of approximately 56% for the county and 44% for the city. In addition, the city was to pay a proportionate share of the cost of the building over a 20-year period as an equalization fund to the county taxpayers who advanced, through the bond issue, a part of the money for the city hall part of the new building. Also created in this agreement was a County-City Building Committee, consisting of two county commissioners, a city councilman, the city manager and the fifth member to be selected by the other four from a list submitted by the Building Managers' Association of Tacoma.

Included on the membership of the present County-City Building Committee are the following: Harry H. Sprinker, Chairman of the Board of Pierce County Commissioners; Emmet R. Burks, Pierce County Commissioner; Omar T. Bratrud, City Councilman; David D. Rowlands, City Manager; and Stanley Mullane, representing the Building Managers' Association of Tacoma.



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The OC-46's practical, compact size lets you work along busy streets or in close quarters. With the fast-acting hydraulic backhoe you have the perfect package for sewer, water and utility installation and maintenance.

WORK-TEST IT! See what the OC-46 will do on your own work. Sample its production and you'll agree: it is today's best tractor buy! Call your Oliver distributor.

Have a look at this new tractor catalog on the OC-4 "Spot-Turn." It's filled with application pictures and data...shows many different work-speeding equipment changes! It's important reading for tractor users. Mail the handy coupon today!

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Progressive Jefferson Parish, La. Reports on New Container System

Schools and Other Public Buildings Are Served By 18 Yd. DUMPMASTER

Jefferson Parish, La.: In November of 1958, this progressive community installed an 18 cu. yd. DEMPSTER-DUMPMASTER and put 24 three cu. yd. steel containers into service, as the first step in streamlining refuse collection in the parish.

Commissioner Ray Conden and Assistant Director Ray Patron are shown in front of the Dumpmaster.

Because of climatic conditions, storage of refuse has always posed a sanitation problem in this area. Ten months ago, under the leadership of Sanitation Commissioner Ray Conden and Assistant Director Ray Patron, the first portion of a long-range plan was executed with the installation of the new system.

Commissioner Conden directed that the schools receive the first of the sanitary, fireproof containers. The service was then extended to other public buildings, until today, 38 containers are in service.

BEFORE: The yard of this parochial school was constantly littered with unsightly trash.

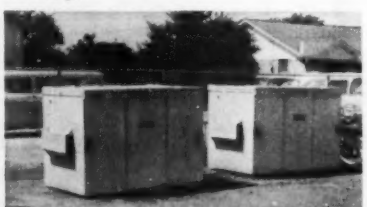
The DEMPSTER-DUMPMASTER prepares to dump its big payload of compacted refuse into the modern Jefferson Parish incinerator.

SCHOOL OFFICIALS PLEASED

Officials of both public and parochial schools have expressed delight with the enclosed storage of garbage and refuse. Many report a marked reduction of flies, rodents, odors and scattering of trash.

ECONOMY BIG FACTOR

"We are all aware of the many sanitary values of enclosed refuse storage, which is the primary reason for purchasing this type of system," Director Ray Patron pointed out, "but our cost sheets — based on several months of operation — prove that we are saving important amounts of money.



AFTER: Two three-yard Dumpmaster containers keep refuse enclosed, reduce flies, rodents and odors.

"The savings in time, money and manpower have enabled us to direct more effort to the important area of residential collection; I am convinced this addition to our service has resulted in specific benefits to every man, woman and child in the parish, while saving tax dollars."

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Knoxville 17, Tenn., Dept. AC-9

Columbia's "Fight Blight" Campaign Has Grass Roots Strength

By IRVING G. McNAYR
City Manager
Columbia, S. C.

Decrepit buildings like this are disappearing in the Columbia program.

Columbia's municipal government plays a vigorous role in the city's annual "Fight Blight" drive to keep Columbia beautiful. The month-long clean-up program is spearheaded by the city's Urban Rehabilitation Department, and receives enthusiastic cooperation from garden clubs, schools, civic organizations and local merchants.

The last campaign was kicked off in March, when the Public Works Department placed 60 new green-and-white trash containers on the business corners of our downtown area. These have amply proved their worth by the amount of trash that our people put into them daily, trash that otherwise might have been thrown onto the street.

The Fire Department complemented its year-round voluntary house-to-house inspection program for fire hazards by issuing press releases emphasizing the importance of clean, sound homes in preventing fires. The police force was instructed to remind litterbugs courteously of the city's anti-litter ordinance. The police chief pointed out in news stories how cleaning alleys, trimming shrubbery and improving both residential and business districts helps combat crime, and also emphasized the importance of converting youthful energy into worthwhile painting, repair and beautification work to curtail juvenile delinquency and mischief. Public Works crews continued their year-round job of street cleaning, trash and garbage collection, tree planting and trimming.

The city Health Department concentrated its general inspection work during the campaign in commercial alleys and sub-standard residential areas (which are largely rental property) by encouraging residents and businessmen to clean up their premises and provide proper garbage and trash containers. Results of the health inspectors' activities included the cleaning of over 1,100 yards and installation of nearly 500 new garbage cans by residents of these areas. Attention was also focused on the Urban Rehabilitation Department's program requiring the improvement or demolition of houses found below standards for human habitation.

Local garden club members donned blue jeans or bermudas to work on planting, pruning, watering and otherwise beautifying public parks and "islands" in streets. The Greater Columbia Garden Club Council, 4,000 strong, transformed an overgrown bog area in Columbia's 40-acre Earlwood Park into a gardenspot of iris, dogwood, redbuds, daylilies, wildflowers and other colorful blooms. Following an overall landscaping plan by the city horticulturist, each garden club assumed responsibility for planting and maintaining a plot. Members of the 50 participating garden clubs combined their efforts to plant ivy as a groundcover for a weed-infested bank overlooking the park. Other garden clubs adopted median strips along local streets, orphanages and public and historic building grounds such as Woodrow Wilson's boyhood home, and planted them to further beautify the city.

Garden club members also made special flower arrangements for display at leading banks, stores, and office buildings in the Capital City, and these displays were judged by nationally-accredited flower-show judges and awarded prizes. Other awards given at a special "Festival of Flowers" award banquet went to garden club beautification projects and individual gardens improving private and public grounds.

The garden clubs also tallied up an impressive score of improvements wrought by individual members: 19,337 bulbs planted, 7,715 shrubs and 2,276 trees planted; 142 homes painted, 35 yards landscaped, 13 garbage cans screened, 29 vacant lots cleaned, 11 patios remodeled and countless other activities.

The Beautification Division of the Parks and Recreation Department and the Public Works Department Tree Division forces correlated their efforts during the spring months further to beautify the 25 city parks, streets and other public property, using willows, judas trees, dogwood, oaks, moun-

Flink HDWS4 Completely Hydraulic Tailgate Spreader — A fleet of these efficient rigs help keep traffic rolling on the Illinois Tollway! Left-rear spinner permits easy 2-3 lane spreads in one pass; saves material. Hydraulically operated, Cab controlled, 2-speed auger permits instant change from abrasives to straight rock salt. Volume controlled by hydraulically operated feedgate.

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tain laurel, roses, camellias, azaleas and other trees and shrubs raised at the city's municipal nursery.

Thousands of local school children took part in the "Fight Blight" campaign; by cleaning up school grounds and competing in poster contests depicting home-conservation and beautification methods they competed for prizes contributed by paint dealers. High school and junior high students were given "home inspection" blanks to check their residences with their parents for signs of "blight" and to note repairs, new paint, remodeling and other improvements made during the drive. Students from one high school, working with contractors who also donated their services and materials, actually rehabilitated one condemned house belonging to a destitute, aged woman.

The press, radio and television stations backed the program to the hilt, treating the placing of trash containers, painting of a rehabilitated house, demolition of a hazardous house, and new planting programs as major news events.

The moving picture theatres also promoted the program by running daily film strips of "Creepy Blight," furnished by the Sears Foundation grant through the city's Garden Club Council. Buses of the local power company all carried "Fight Blight" posters.

The campaign was conducted by a steering committee headed by a civic-minded local minister and comprised of municipal officials and representatives from the city schools, Chamber of Commerce, Greater Columbia Garden Club Council, local merchants, an architect, advertising executives and the press. Subcommittees were in charge of publicity, merchants' activities and special projects.

Metallic Wastes Stop Pollution Control

Large quantities of metallic wastes illegally dumped into the sanitary sewer system have all but wiped out the treatment process at New York City's Bowery Bay Sewage Treatment Plant. The plant employs the modified aeration process with separate sludge digestion. The introduction of copper, chrome and nickel wastes into the system, from a source or sources not yet discovered by city inspection forces, not only destroyed the treatment process but has forced the city to barge raw, undigested sludge to sea.

Gas from the digestion process at this plant serves as the fuel to

run the dual-fuel engines used to operate the pumps, blowers, and other equipment. Without this gas production, the city is forced to spend more than $200 a day for fuel to operate the plant's machinery—without obtaining full benefit from the treatment process.

Unable to cope with the critical situation with his own inspection forces, Public Works Commissioner Frederick H. Zurmuhlen has appealed to other city departments and various independent agencies to cooperate with his department in an all-out effort to detect and prevent the discharge of the harmful metallic wastes. The city adopted specific regulations to cover the disposal of toxic and other perilous or prohibited types of waste in the sewers in November, 1957.

Surplus Dogs and Cats in Your City?

The Humane Society of the United States has produced a color filmstrip, with recorded narration, that analyzes the problem of "surplus" dogs and cats in communities throughout the country.

Entitled "Dogs, Cats and Your Community," the 57-frame filmstrip shows that the breeding of puppies and kittens by people who neither want them nor intend to keep them is the cause of the animal oversupply that now numbers more than 40 million.

Purpose of the filmstrip is to draw nationwide attention to the breeding of animals not wanted by their owners as an unrecognized major cruelty, causing suffering for animals that are denied homes and draining public funds and private philanthropy.

"Dogs, Cats and Your Community" suggests steps to be taken to halt the surplus animal breeding. Included is a strong recommendation for substantially higher license fees for unspayed female dogs as an economic inducement for spaying.

The filmstrip and 12-inch record (running time: 12 minutes) may be borrowed from the Humane Society of the United States, 111 E Street, N.W., Washington 4, D. C., at a cost of $1 for postage and handling. "Dogs, Cats and Your Community" can be purchased for $5.

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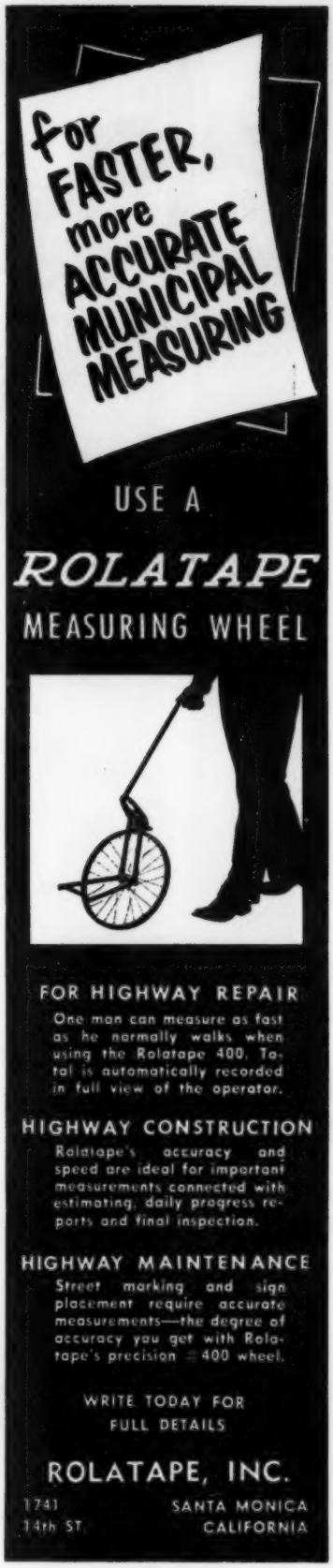
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We Sample Citizen Attitudes

. . . to guide the development of sound programs

By **RALPH L. YANISH**, Borough Manager, Quakertown, Pa.

The Quakertown Borough Council had been curious for some time about voters' opinion on many of the problems that confront the city. Therefore, in an effort to sample citizen attitudes, a "quiz" form was distributed to 100 of Quakertown's citizens in a cross section which included doctors, truck drivers, teachers, laborers, ministers, merchants, attorneys, business executives, engineers, salesmen, and housewives.

The object of the survey was briefly stated at the beginning of the seven-page form.

"Help Your Town to Good Government. What Do You Want? . . . This survey is being conducted to determine what you, the citizens, desire in the way of services from your borough." The 82% response was exceptionally good and in our opinion showed considerable voter interest. Of those questioned, the majority advised they had attended council meetings in the past.

Voter opinion on taxes was far from conclusive, bearing out to a large extent the old saying that the only good tax is the one someone else pays. For example, on the question *"If you had to raise additional funds to operate your borough government, rank the following in order of desirability:"*

Type of Tax	1st Choice	2nd Choice
Increase of Property Tax	5	11
Wage Tax	27	9
Employee Tax $5 to $10 per employee	15	12
Charge for garbage and rubbish pickup	30	19

Forty-five considered our streets adequate and 25 felt that they needed improvement. In answer to the question of a bond issue to finance new street and storm sewer construction, 42 stated that they would approve such a measure and 30 stated that they would vote against it. Regarding voters' opinion on the financing of new streets, the results appear in the table at the right.

Quakertown operates its own municipal electric, water and sewer systems. Majority voter opinion showed that services given by our utilities were satisfactory and that rates were reasonable. Seventy-three found the water service satisfactory but only 57 considered rates as reasonable. Eighteen felt that the borough should distribute water to out of town residents but 44 stated that it shouldn't. Eleven had no opinion.

Thirty-seven voters stated that the sewer system was adequate, 27 did not agree and 14 had no opinion. However, 66 considered the present $22.50 per year per residence charge for service as reasonable. Twelve did not and 4 had no opinion. Quakertown is considering the enactment of an ordinance that envisions charging for sewer service at the rate of 80% of the water billing. The "quiz" results show 20 in favor, 32 against and 13 with no opinion.

Of possible interest to other municipalities were the results on desirable capital improvements for the water system. Despite all the publicity for fluoridation of public water supply, very few of our citizens are in favor of investing money for this purpose.

Improvement	1st Choice	2nd Choice
Install water softening equipment	32	13
Fluoridation of water	8	16
Water extensions	23	23
Improve pressure—enlarge mains and elevated storage	18	18

Seventy-eight stated that the municipal electric plant gave satisfactory service and four did not. Concerning rates, 83 considered them reasonable, 4 thought them excessively high and 5 had no comment.

Regarding sanitation and health, 43 urged more stringent dog control laws, with 23 dog lovers opposed and 14 offering no opinion. Seventy stated that garbage and rubbish pickup was satisfactory, 10 felt it inadequate and 2 offered no opinion. Citizens questioned urged more frequent rubbish pickup and the use of covered garbage trucks.

Municipalities considering enactment of zoning regulation may take heart from the results of our survey. Eighty-one of 82 replies favored zoning. The present zoning ordinance has been in effect 10 years. And regarding future growth progress, 62 favored expansion for industrial use with 57 in favor of annexation for residential purposes, Five considered industrial expansion undesirable and 10 felt expansion for residential purposes undesirable.

The Future

A final question in the survey inquired as to what three improvements our citizens would prefer to have our Borough Council accomplish within the next few years. The replies reflect the fact that few citizens possess any strong desire for any particular municipal improvement.

Of the 82 questionnaires received, 15 male and 5 female citizens urged better streets. It is also of interest that 12 men and 4 women urged the formation of a joint committee of the Chamber of Commerce and Borough Council to study ways and means of attracting industry to the borough.

Surprisingly, the survey revealed that our women voters are apparently thinking along the same lines as our male citizens, since their suggestions for improvement practically paralleled those of the men.

Street Financing

Type	Borough to pay 100%	Property owner to pay 100%	Borough and property owner to share equally
New streets, new real estate development	11	30	24
New street—Normal openings	55	7	11
Hard surface existing dirt streets	62	5	8
Rebuild existing hard surface streets	70	2	7

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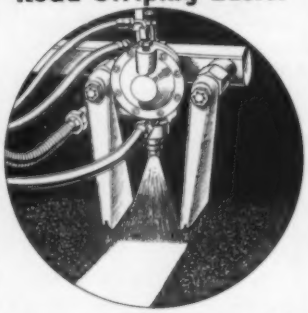

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Public Relations Program Aims at Doubled Construction Activity

A national program to inform American voters of the necessity for enlarged water and sewage facilities is being launched by the Water and Sewage Works Manufacturer's Association as a result of a six-month study of the problems confronting the industry.

Based upon information gathered from members of the industry themselves (including water utility managers), from editors, from government authorities and published materials, the Association concluded the public is ill-informed about the requirements for local water and sewage facilities to meet the present and growing needs o four population.

The study showed more than $55 billion has been invested in water and sewage plants. Yearly operating costs amount to $933 million in the water industry and $284 million in sewage plants. Plant investment and expansion over the past seven years has not come close to reaching requirements. Projected figures for 1959 indicate expansion of about $1 billion. To catch up with needed improvement and expansion, work should be progressing at a rate of $2.5 billion a year.

Three main objectives of the Association's public relations program are:

- **to double water and sewage works manufacturer's business with water and sewage utilities in the next ten years.**
- **to alert the 170,000,000 American people — 80,000,000 registered voters—to the need for adequate water and sewage facilities.**
- **to convince the people that to insure the protection of their own health and the health of their families they should provide the funds for adequate water and sewage facilities at fair rates.**

The Association commissioned several public relations tests in recent months to learn whether interest could be aroused in these problems. The now famous *Fortune* article on the "Worst Public Works Problem" was distributed to 7,500 mayors and utility managers as well as to 700 newspaper editors.

AWWA's President Lauren Grayson was placed on the program of the Federation of Women's Clubs at their convention in Los Angeles

in June. The facts in his speech were released to the wire services with the result that many newspapers over the country carried the story of the problem of the need for water and sewage utility expansion.

Radio and television commentators received scripts on this subject and over 400 programs used the material. This indicated a definite interest in the problem and opened the door for more material and actual presentation of industry leaders in this media.

Results of their public relations tests showed WSWMA officials that: editors are by no means fully aware of water and sewage problems and needs; leadership groups such as the Women's Federation were cooperative; radio and television stations would use material on the subject; a coordinated national public relations program was essential to increase business for the manufacturers and to meet existing water and sewage works problems.

Accordingly, the Association has established the National Water Institute as its public relations instrument and will use the Institute as its communication organ. The Association's theme will be "Better Living With Better Water Service."

The National Water Institute will distribute publicity to daily newspapers, weekly newspapers, national magazines, 1200 radio stations, and 450 television stations. It will prepare special publications and special films, and will mail editorial cartoons to newspapers on a monthly basis.

The Institute's full-scale public relations program will get under way about January 1st, 1960.

Standards for Mobile Homes

Representatives of 24 national organizations have recommended that the American Standards Association initiate a project to develop standards for mobile homes and travel trailers. The action was taken at a general conference called by the American Standards Association at the request of the Mobile Homes Manufacturers Association and Trailer Coach Association (West Coast).

The purpose of the standard is to provide a uniform national code which will serve the needs of the makers of the mobile homes, the municipalities which must accommodate these units, and the owners of mobile homes.

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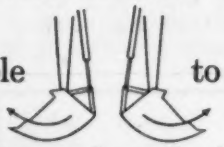
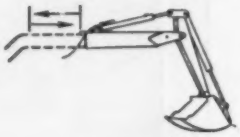
Here's why: The dippers for Hydrohoes, ranging from 24 to 60 inches wide, are reversible  to give you two-way digging action. Also, the dippers have hydraulic wrist action to bite in fast and hard. The boom on this hoe telescopes 4 feet  to give you efficient dumping reach for every job, eliminating unnecessary move-up time.

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ZONING AND PLANNING NOTES

Edited by NORMAN WILLIAMS, Jr.

Trailer Ordinances—Standing to Challenge Restrictions

NEW JERSEY. *Walker* v. *Borough of Stanhope*, 130 *Atlantic* (2d) 372 (Supreme (highest) Court, March 25, 1957).

In this case, an ordinance providing first for exclusion of trailer camps, and then for their licensing, by a rural Borough, was challenged on constitutional grounds by a retail seller of trailer homes—the only one in the vicinity—with a place of business about four miles from the Borough in question. The evidence made it clear that, since the trailer sales establishment was started, the increasing restriction of trailers in nearby communities had forced it, at considerable added cost, to extend its operations farther and farther afield to carry on its business. The legal issue was whether the trailer sales establishment—which admittedly had been losing business—had standing to challenge the ordinance, since it was neither a citizen nor a taxpayer in the borough.

In the opinion, the Court held that the company did have standing to sue.

Required Distance Between Community Facilities (or Streets) and Nuisance Establishments

NEW JERSEY. *Esso Standard Oil Company* v. *Township of North Bergen*, 141 Atlantic (2d) 81 (Appellate Division (intermediate court), May 1, 1958).

NEW JERSEY. *Township of Howell* v. *Sagorodny*, 134 Atlantic (2d) 452 (Appellate Division (intermediate court), August 21, 1957).

In the *North Bergen* case, garages and filling stations were prohibited within 200 feet of any "property used for" a public or parochial school. In this case, a proposed filling station was within 200 feet of the parochial school playground, but not of the school building. The Court held that the restriction applied to any land reasonably used for school purposes.

In the *Howell* case, junk yards were required to be at least 150 feet from a highway and 500 feet from a residence, and were required to obtain a license. In the opinion, the Court held that the standards for granting a license could be found elsewhere in the ordinance. The requirement for a fence was also held reasonable.

Yard Violations—Joinder of Lots

NEW JERSEY. *Schack* v. *Trimble*, 145 Atlantic (2d) 1 (Supreme (highest) Court, October 6, 1958).

In this case, the location of a single-family house on its lot violated the applicable side and rear yard requirements The owners of this house bought the adjacent lot and built a two-car garage there. When they subsequently sought a permit to construct a residence on what was formerly the adjacent lot, a building permit was refused, on the theory that the joinder of the two lots had cured the rear yard violation, which should not be re-created; and it was argued that construction of an accessory garage on the adjacent lot had necessarily created a joinder, since under the ordinance a garage could not be put on a separate lot from the building to which it is accessory.

In the opinion, the Court first held that the plaintiffs never intended to join the two lots, particularly since they never knew of the zoning violation—with citations of laws on the abandonment of non-conforming uses. requiring a showing of intention. (This whole discussion involved the frequent confusion between non-conforming uses and non-conformity with bulk regulations.) The Court also held that there was no requirement that garages must be on the same lot as the house to which they are accessory. Two judges dissented, on the ground that joinder was not a subjective matter of intent.

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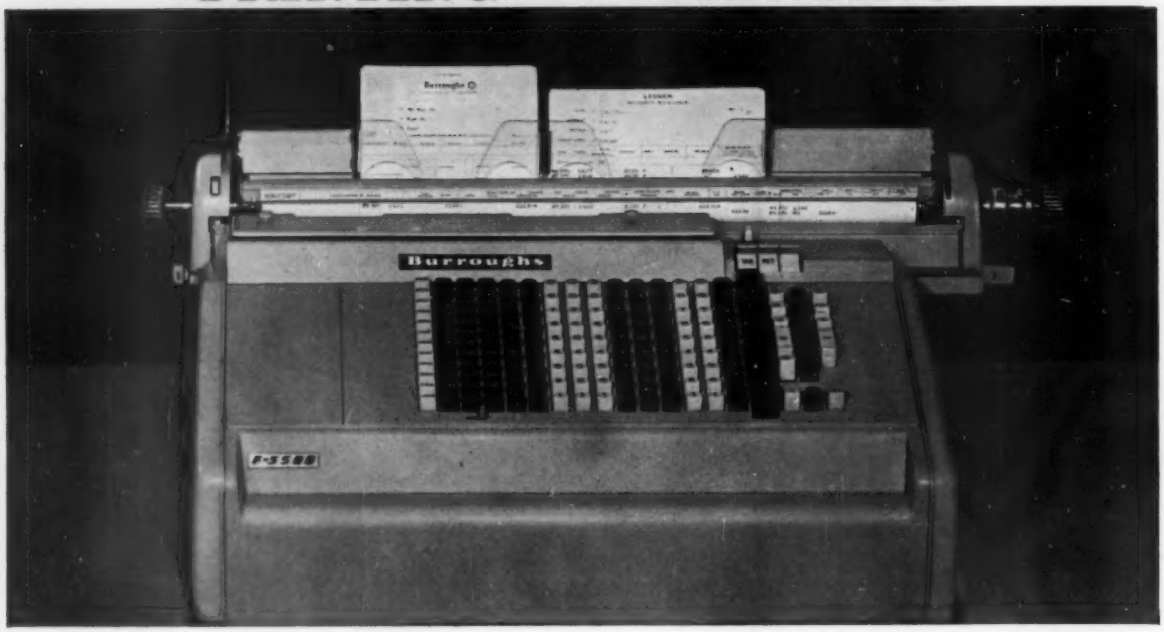

Now dual printing is combined with fully automatic accounting! With Burroughs new smartly styled F-5000 Dual Printing Accounting Machine, there are no extra operator decisions to make and no extra keys to punch. The machine prints identical figures—simultaneously—on two original records. Balances are automatic without key depression. And you get far greater flexibility to help you handle more accounting jobs faster. Here's why:

NEW SPEED: Faster printing time speeds machine operation, which is 100% automatic. 33-1/3% reduction of posting cycle shrinks work time considerably. NEW FLEXIBILITY: Dual printing is applicable to a wide range of jobs. Programming capacity is increased up to 100%. Memory capacity is fully utilized.

Weigh these merits, together with the F-5000's keyboard input and 252 digit memory, against your accounting jobs—payables, receivables, payroll, ledger statement with distribution, and utility billing, to name just a few. For full details just phone our nearby branch office. Or write to Burroughs Corporation, Burroughs Division, Detroit 32, Michigan. Burroughs—TM

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"NEW DIMENSIONS / in electronics and data processing systems"

LEGAL NOTES AND DECISIONS

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS, Charles S. Rhyne, General Counsel

Alleys—Closure Invalid

Where city proposed to close entire alley, held closing invalid because all abutting property owners had not given written consent as required by statute. *Roberts* v. *Pace*, 322 S.W.2d 75 (Ark., March 23, 1959)

Annexation—Village and City Split Taxes from Annexed Areas

In action by city against village for certain tax monies, held village which had received taxes levied on property annexed by city had no statutory right thereto and equitable division thereof would be made. *City of Wayzata* v. *County of Hennepin*, 95 N.W.2nd 506 Minn., March 20, 1959)

Boats—Regulation of Motor Boats On City Lake Upheld

In action concerning violation of ordinance prohibiting use of motors in excess of six horsepower in boats on city-owned lake, held ordinance was reasonable use of police power. *City of Springfield* v. *Mecum*, 320 S.W.2d 742 (Mo., Feb. 2, 1959)

City Employees—City Must Pay Same Rates As Private Industry

Where charter provision makes it mandatory on city to pay employees same rate paid in private industry to same groups and where private employers made payments into employee health fund, held city employees not entitled to such payments but are entitled to the money equivalent of the protection these payments will buy. *Martin* v. *City and County of San Francisco*, 336 P.2d 239 (Cal. App., March 11, 1959)

Firemen—Less Than 48-Hour Week Denied

In proceeding seeking decree that city board of engineers had authority to establish work week shorter than 48 hours for permanent firemen, held relief denied. *Picard* v. *City of Worcester*, 156 N.E.2d 689 (Mass., March 9, 1959)

Labor Unions—County Entitled to NLRB Protection

In appeal of action from State Court to enjoin union from picketing job at county courthouse, held that county is a "person" entitled to protection of NLRB and it was error for the State Court to exercise jurisdiction. *Plumbers, etc., Local 298, A.F.ofL.* v. *County of Door*, 79 S. Ct. 844 (May 4, 1959)

Licenses—Turkish Bath—Revocation Upheld

In action by owner to annul order revoking permit to operate turkish bath, held evidence sustained findings of board that business was carried on in such manner as to permit patrons to engage in conduct which was indecent and prohibited by law. *Sultan Turkish Bath, Inc.* v. *Board of Police Com'rs.*, 337 P.2d 203 (Cal. App., March 27, 1959)

Off-Street Parking—Suit to Enjoin Dismissed

In suit to enjoin city from acquiring realty for off-street parking facilities and to declare ordinance invalid, dismissed since taxpayer had complete remedy in condemnation proceedings. *Glueck Realty Co.* v. *City of St. Louis*, 318 S.W.2d 206 (Mo., Nov. 10, 1958).

Swimming Pool—Electric Shock—City Not Liable

In action for injuries sustained from shock from electric hair dryer in bathhouse in city-owned pool, held that knowledge of pool employees of dryer's defective condition did not make city liable on theory it breached its duty to desist from furnishing electricity to appliance. *City of Decatur* v. *Parham*, 109 So.2d 692 (Ala., Feb. 19, 1959)

Tax Liens—City Superior to U. S.

Held, ordinarily city liens are subordinate to U. S. liens, but U. S. lien is not valid as to another judgment creditor until notice is filed in Register's Office of county in which property subject to lien is situated. *City of New York* v. *Gilmore's Steak House, Inc.*, 183 N.Y.S.2d 110 (N. Y. Sup. Ct., N. Y. Cty., Dec. 22, 1958)

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THE PRESTIGE LINE

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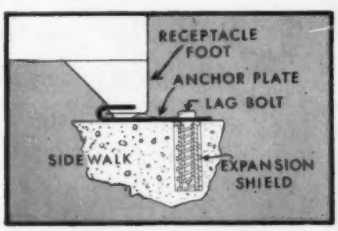

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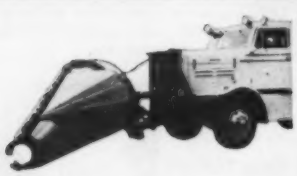

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Whether snow removal problems in your area require a high-speed, heavy-duty V-type plow **(above)** or a lighter, maneuverable Reversible type, Frink has the plow specifically designed to do the job . . . faster, safer, at lower cost.

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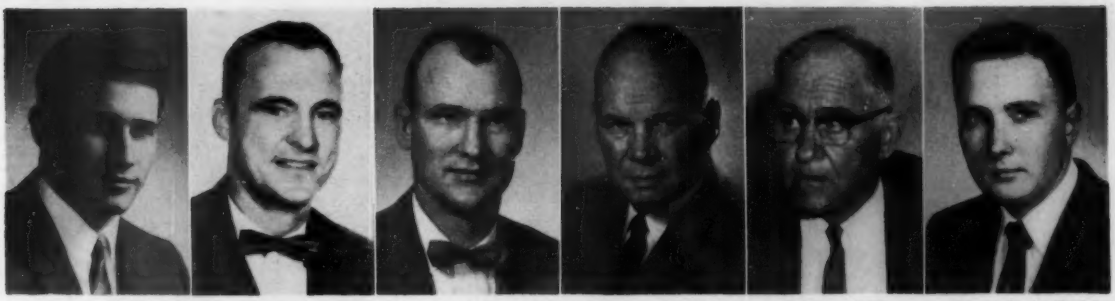
RECENT CITY MANAGER APPOINTMENTS



John Weichsel, Ellenville, N. Y. | *Leonard L. Bishop, Jr., Hazel Park, Mich.* | *L. Jack Davis, Gainesville, Tex.* | *F. Dow Hamblin, Rochester, N. Y.* | *Leonard Burt, Chandler, Okla.* | *Kenneth E. Smith, Eagle Lake, Tex.*

E. G. BARNES, municipal comptroller and assistant manager of West Vancouver, Canada, was recently appointed municipal manager of that city, succeeding W. N. McDonald, deceased.

LEONARD L. BISHOP, JR., manager at Elm Grove, Wis., for the past three years, was recently appointed manager of Hazel Park, Mich., succeeding Calvin C. Henry. Mr. Bishop has previously served as manager at Carmel, Levant, and Wells, Me., and South Miami, Fla.

LEONARD BURT is the new manager of Chandler, Okla., succeeding Orville Hunt, who has resigned to enter private business.

ROBERT B. CLARY, city engineer of Newton, Kan., was recently appointed as manager of that city, succeeding Chester E. Petersen, now manager at Greenville, Texas.

HOWARD D. CRISWELL, formerly manager at Carolina Beach, N. C., is the new manager of Moundsville, W. Va., succeeding Victor Bortnick. Mr. Criswell has had 33 years' active service in the U. S. Army.

L. JACK DAVIS, director of finance of Grand Prairie, Tex., has been appointed the new manager of Gainesville, Tex., succeeding Homer B. Bly, now manager at Denton, Tex. Mr. Davis has served as personnel director and assistant director of finance at Grand Prairie and administrative aide at Lubbock, Tex.

JAMES T. EMANUEL was recently appointed as manager of Sanger, Calif., succeeding Douglas Flautt, who resigned.

E. A. EWING, of Weirton, W. Va., has been appointed the manager of that city, succeeding William L. Kell, who resigned.

DONALD R. FOSTER, is the newly appointed manager of Otsego, Mich., succeeding James R. Schubert.

GERALD G. FOX, administrative assistant of San Antonio, Tex. for the past two years, is the new manager of Ennis, Tex., succeeding George R. Schrader, now manager at Mesquite, Tex.

F. DOW HAMBLIN, commissioner of public works for the past five years at Rochester, N. Y., is the new manager of that city, succeeding Robert P. Aex, now director of local government for the State of New York. Mr. Hamblin has had 30 years' experience in the U. S. Navy.

JOHN D. HANE, assistant city manager of St. Louis Park, Minn., has been appointed as manager of Montevideo, Minn.

FRANK E. HARRISON, layout engineer and clerk of construction of Muskegon Heights, Mich., is the new manager of Roosevelt Park, Mich., succeeding Arthur R. Bergquist, now manager at Manistee, Mich.

G. O. HEADRICK, city comptroller of Seward, Alaska, is the new manager of that city, succeeding William F. Bordwell, who has resigned.

COLE HENDRIX, administrative assistant of San Angelo, Tex., is the new manager at Marceline, Mo., succeeding Lawrence Gish, now manager at Arkansas City, Kan. Mr. Hendrix has served as research assistant for the Bureau of Government Research, University of Kansas.

G. S. LAMBERT, city engineer of Fairborn, Ohio, was appointed manager of that city, succeeding Earl P. Wagner, who resigned. Mr. Lambert has been previously employed in private industry.

HUEY LONG, manager at Dewey, Okla. for the past three years, was recently appointed as the first manager of Del City, Okla. Mr. Long also served as manager at Atoka, Okla., for five years.

E. W. MEDLEY, assistant manager at Ontario, Calif., was recently appointed as the first city administrator for the City of Artesia, Calif.

A. J. O'ROURKE, formerly manager at De Soto, Mo. for eight years, is the new manager of Neosho, Mo., succeeding Homer B. Ball, now manager at Brookfield, Ill.

LAWRENCE W. O'ROURKE, manager at Montclair, Calif. for the past three years, is the new manager at Turlock, Calif. Mr. O'Rourke formerly served as manager at Tehachapi and Monte Vista, Calif.

CLIFFORD PACE, manager at Asheboro, N. C. for the past nine years, is the new manager at New Bern, N. C., succeeding C. L. Barnhardt, now manager at Jacksonville, N. C.

J. E. PHILLIPS, manager at Miami, Ariz. for the past three years, is the new manager at Globe, Ariz., succeeding Murray D. Snyder, now manager at Grants, N. M. Mr. Phillips was previously office manager of Gila General Hospital, Globe.

LOUIS PRICE, assistant city manager at Valdese, Ga., was recently appointed city manager of Mt. Holly, N. C., succeeding Henry Dunn, Jr.

J. J. SALOVAARA, manager at Newark, Del., was named the new manager of Anne Arundel County, Md., succeeding Edward R. Lonergan. Mr. Salovaara has also served as manager at Albany, Ore., and Xenia, Ohio.

KENNETH E. SMITH, administrative aide to the manager of Waco, Tex., has been appointed the manager of Eagle Lake, Tex., succeeding James W. Dodson, now manager of West Columbia, Tex.

WILLIAM A. SOMMERS, manager at Bensalem Township, Pa. for the past two years, has been appointed as the first manager of Franklin Township, N. J.

FRED A. SOUDERS has been appointed manager of Hollidaysburg, Pa., succeeding Robert R. Mitchell, now manager at Sharpsville, Pa.

LEROY A. STARKEY, administrative assistant and director of finance for the City of Downey, Calif., has been appointed manager of Montclair, Calif., succeeding Lawrence W. O'Rourke. Mr. Starkey has served as assistant city manager of Hawthorne, Calif., and administrative assistant at Santa Ana, Calif.

JAMES O. TENNANT, manager at Indio, Calif., for the past three years, has been appointed the first manager of Barstow, Calif. Mr. Tennant formerly served as manager at Farmington, Mich.

FRANK L. TUCKER, engineer for the State of Vermont Highway Department, has been appointed manager of Barre (Town), Vt., succeeding Arthur H. Curtis, now manager at Monroeville, Pa.

HERBERT TUCKER, city engineer of Harper Woods, Mich., was recently appointed as manager of that city, succeeding Robert J. McNutt, who is now manager of Southfield, Mich.

JOHN WEICHSEL, administrative assistant to the manager at Kalamazoo, Mich., has been appointed the first manager of Ellenville, N. Y.

CHESTER F. WILLIAMS, manager at Mascoutah, Ill. for the past four years, was recently appointed as the first manager of Centralia, Ill. Mr. Williams had previously served as manager of Sallisaw, Okla.

ROBERT L. WILLIAMS, first city manager of Tracy, Calif., was recently appointed the first manager of Eureka, Calif. Mr. Williams previously served as the first manager at Needles, Calif., and also as an administrative assistant at Montebello, Calif.

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Executive Director
International City Managers' Association

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CONVENTIONS — WHEN AND WHERE

Conventions listed this month for the first time are indicated by an asterisk (*)

Sept. 9-11—Atlanta, Ga.
GEORGIA WATER & SEWAGE ASSOCIATION. Annual Meeting (Georgia Tech.). Sec.-Treas., A. T. Storey, 1 Boyd St. N.W., Atlanta 13, Ga.

Sept. 9-11—Liverpool, Nova Scotia
AMERICAN WATER WORKS ASSOCIATION—Canadian Section, Maritime Branch. Annual Meeting (White Point Beach Lodge). Sec., J. D. Kline, General Manager, Public Service Commission, Halifax, Nova Scotia.

Sept. 9-11—Milwaukee, Wis.
AMERICAN WATER WORKS ASSOCIATION—Wisconsin Section. Annual Meeting (Hotel Schroeder). Exec. Sec., Harry Breimeister, 405 City Hall, Milwaukee 2, Wis.

Sept. 10-12—Mackinac Island, Mich.
MICHIGAN MUNICIPAL LEAGUE. Annual Meeting (Grand Hotel). Exec. Dir., John H. Huss, 205 State Street, Ann Arbor, Mich.

Sept. 10-12—Salt Lake City, Utah
UTAH MUNICIPAL LEAGUE. Annual Meeting (Newhouse Hotel), Exec. Dir., Tom McCoy, Newhouse Hotel, Salt Lake City, Utah.

Sept. 13-14—Huntsville, Ala.
ALABAMA LEAGUE OF MUNICIPALITIES. Annual Meeting (Hotel Russell Erskine). Exec. Dir., E. E. Reid, Alabama League of Municipalities, Montgomery, Ala.

Sept. 13-17—Montreal, Canada
COMMUNITY PLANNING ASSOCIATION OF CANADA. National Planning Conference (Sheraton-Mount Royal Hotel). Sec.-Treas., Miss J. M. Laventure, Community Planning Association of Canada, 77 MacLaren St., Ottawa, Canada.

Sept. 13-17—New York, N. Y.
INSTITUTE OF TRAFFIC ENGINEERS. Annual Meeting (Commodore Hotel). Exec. Sec., David M. Baldwin, 211 Stratchona Hall, New Haven 11, Conn.

Sept. 14-16—Lexington, Ky.
AMERICAN WATER WORKS ASSOCIATION—Kentucky-Tennessee Section. Annual Meeting (Lafayette Hotel). Sec.-Treas., J. Wiley Finney, Jr., 553 S. Limestone St., Lexington, Ky.

Sept. 16-18—Akron, Ohio
OHIO MUNICIPAL LEAGUE. Annual Conference and Products Exhibit (Mayflower Hotel). Exec. Dir., John P. Coleman, 60 E. Broad St., Columbus 15, Ohio.

Sept. 16-18—Minneapolis, Minn.
AMERICAN WATER WORKS ASSOCIATION—North Central Section. Annual Meeting (Hotel Pick-Nicollet). Sec.-Treas., L. N. Thompson, St. Paul Water Department, 216 City Hall, St. Paul 2, Minn.

Sept. 16-18—Upper Saranac Lk., N. Y.
AMERICAN WATER WORKS ASSOCIATION—New York Section. Fall Meeting (Saranac Inn). Sec., Kimball Blanchard, Neptune Meter Co., N. Y. Branch Sales Office, 2222 Jackson Ave., Long Island City, N. Y.

Sept. 16-18—Yankton, S. D.
SOUTH DAKOTA MUNICIPAL LEAGUE. Annual Meeting (Charles Guerny Hotel). Exec. Dir., J. G. Barger, P. O. Box 938, Aberdeen, S. D.

Sept. 20-22—Dallas, Texas
TEXAS MUNICIPAL LEAGUE. Annual Meeting (Baker Hotel). Exec. Dir., Steve Matthews, 402 Vaughn Bldg., Austin 1, Texas.

Sept. 20-22—Old Point Comfort, Va.
LEAGUE OF VIRGINIA MUNICIPALITIES. Annual Meeting (Chamberlin Hotel). Exec. Sec., Harold I. Baumes, 905 Travelers Bldg., Richmond 19, Va.

Sept. 20-23—Lake Placid, N. Y.
NEW ENGLAND WATER WORKS ASSOCIATION. Annual Meeting (Lake Placid Club). Sec., Joseph C. Knox, 73 Tremont St., Room 549, Boston 8, Mass.

Sept. 20-23—Seattle, Wash.
AMERICAN PUBLIC WORKS ASSOCIATION. Annual Convention (Olympic Hotel). Exec. Dir., Robert D. Bugher, 1313 E. 60th St., Chicago 37, Ill.

Sept. 20-24—Minneapolis, Minn.
AMERICAN TRANSIT ASSOCIATION. Annual Convention (Leamington Hotel). Genl. Sec., A. W. Baker, 355 Lexington Ave., New York 17, N. Y.

Sept. 20-24—Philadelphia, Pa.
AMERICAN INSTITUTE OF PARK EXECUTIVES. Annual Conference (Benjamin Franklin Hotel). Exec. Sec., Alfred B. LaGasse, American Institute of Park Executives, Ogelbay Park, Wheeling, W. Va.

Sept. 23-25—Corbin, Ky.
KENTUCKY MUNICIPAL LEAGUE. Annual Meeting (Cumberland Falls State Park). Exec. Sec., Carl B. Wachs, Room 64, McVey Hall, University of Kentucky, Lexington, Ky.

Sept. 23-25—Grand Forks, N. D.
NORTH DAKOTA WATER AND SEWAGE WORKS CONFERENCE. Annual Meeting (Dacotah Hotel). Sec.-Treas., W. Van Heuvelen, c/o State Department of Health, Bismarck, N. D.

Sept. 23-25—Saginaw, Mich.
AMERICAN WATER WORKS ASSOCIATION—Michigan Section. Annual Meeting (Bancroft Hotel). Exec. Sec., T. L. Vander Velde, Chief, Section of Water Supply, Michigan Department of Health, Lansing 4, Mich.

Sept. 26-Oct. 1—New York, N. Y.
INTERNATIONAL ASSOCIATION OF CHIEFS OF POLICE. Annual Convention (Hotel Statler) Exec. Sec., Leroy W. Wike, 616 Mills Bldg., Washington 6, D. C.

Sept. 27-29—Asheville, N. C.
NORTH CAROLINA LEAGUE OF MUNICIPALITIES. Annual Meeting (Battery Park Hotel). Exec. Dir., Mrs. Davetta Steed. 1009 Raleigh Bldg., Raleigh, N. C.

Sept. 27-29—Hutchinson, Kans.
LEAGUE OF KANSAS MUNICIPALITIES. Annual Convention (Baker Hotel). Exec. Dir., Allen E. Pritchard, Jr., 512 Capitol Federal Bldg., Topeka, Kans.

Sept. 27-29—Kansas City, Mo.
AMERICAN WATER WORKS ASSOCIATION—Missouri Section (President Hotel). Sec., W. A. Kramer, State Office Bldg., Jefferson City, Mo.

Sept. 28-30—Jefferson City, Mo.
MISSOURI MUNICIPAL LEAGUE. Annual Convention (Hotel Governor). Exec. Dir., Bruce J. Carl, 2121 Guitar Bldg., Columbia, Mo.

Sept. 28-30—Toronto, Canada
CANADIAN INSTITUTE OF SEWAGE AND SANITATION. Annual Meeting (Royal York Hotel). Sec.-Treas., Dr. A. E. Berry, 72, Grenville St., Toronto, Canada.

Sept 28-Oct. 2—Chicago, Ill.
NATIONAL RECREATION CONGRESS. Annual Meeting (Hotel Morrison). Sec.-Treas., Willard B. Stone, 8 W. 8th St., New York, N. Y.

Oct. 4-7—Pittsburgh, Pa.
PENNSYLVANIA MUNICIPAL AUTHORITIES ASSOCIATION. Annual Convention (Penn-Sheraton Hotel). Sec., Dr. Charles F. LeeDecker, 506 State Street Bldg., Harrisburg, Pa.

Oct. 7—New York, N. Y.
REGIONAL PLAN ASSOCIATION. Thirtieth Anniversary Conference (Hotel Roosevelt). Exec. Dir., John Kieth, Regional Plan Association, 230 W. 41st St., New York 36, N. Y.

Oct. 7-9—Baltimore, Md.
AMERICAN WATER WORKS ASSOCIATION—Chesapeake Section. Annual Meeting (Sheraton Belvedere Hotel). Sec., C. J. Lauter, 6955 33rd St., N.W., Washington 15, D. C.

Oct. 11-13—Dickinson, N. D.
LEAGUE OF NORTH DAKOTA MUNICIPALITIES. Annual Meeting (Ray Hotel). Exec. Sec., Mrs. H. C. McCreery, 408½ Main Avenue, Bismarck, N. D.

Oct. 11-14—Cleveland, Ohio
NATIONAL INSTITUTE OF GOVERNMENTAL PURCHASING. Annual Conference and Products Exhibit (Hotel Cleveland-Sheraton). Gen. Chairman, Leo Weil, Commissioner of Purchases and Supplies, Cleveland, Ohio.

Oct. 11-14—Philadelphia, Pa.
NATIONAL ASSOCIATION OF ASSESSMENT OFFICERS. Annual Convention (Sheraton Hotel). Exec. Sec., Albert W. Noonan, 1313 E. 60th St., Chicago 37, N. Y.

Oct. 11-14—Pittsburgh, Pa.
NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS. Annual Convention (Penn Sheraton Hotel). General Counsel, Charles S. Rhyne, 839 17th St., Washington 6, D. C.

Oct. 11-15—Boston, Mass.
AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS. Annual Convention (Statler Hotel). Exec. Sec., A. E. Johnson, 917 National Press Bldg., Washington 4, D. C.

Oct. 11-15—Dallas, Texas
FEDERATION OF SEWAGE AND INDUSTRIAL WASTES ASSOCIATIONS. Annual Convention (Memorial Auditorium). Exec. Sec., Ralph E. Fuhrman, 4435 Wisconsin Ave., N. W., Washington 16, D. C.

Oct. 13-16—Atlantic City, N. J.
PENNSYLVANIA WATER WORKS ASSOCIATION—Annual Meeting (Chalfonte-Haddon Hall). Sec., David Dunlap, 2609 N. Second St., Harrisburg, Pa.

Oct. 18-20—Portland, Ore.
LEAGUE OF OREGON CITIES—Annual Meeting. Exec. Sec., Herman Kehrli, P. O. Box 5177, Eugene, Ore.

Oct. 18-21—Cincinnati, Ohio
NATIONAL ASSOCIATION OF HOUSING AND REDEVELOPMENT OFFICIALS. Annual Convention (Netherland-Hilton Hotel). Exec. Dir., John D. Lange. 1313 E. 60th St., Chicago 37. Ill.

Oct. 18-21—New Orleans, La.
AMERICAN WATER WORKS ASSOCIATION—Mississippi-Alabama Section jointly with the Southwest Section. Annual Meeting (Roosevelt Hotel). Sec.-Treas., Ernest Bryan, McWane Cast Iron Pipe Co., Box 2601, Birmingham, Ala.

(Continued on page 255)

YOU'RE AHEAD

because the specialized experience of two pioneer companies in front-end loaders is now combined . . .

ALLIS-CHALMERS
—pioneer of the world's first successful hydraulically-controlled crawler-mounted tractor shovel.

result of 14 years' leadership

TRACTOMOTIVE
—one of the first to develop heavy-duty rubber-tired loaders.

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Now Tractomotive Corporation has become part of Allis-Chalmers . . . and that means we'll be able to serve you better than ever. One very important reason is that the specialized experience of each organization in its field cannot be surpassed.

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See 'em at work—your Allis-Chalmers dealer will be glad to demonstrate the machine of your choice—wheel or track-mounted, whichever meets your job needs best. Just give him a call. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wis.

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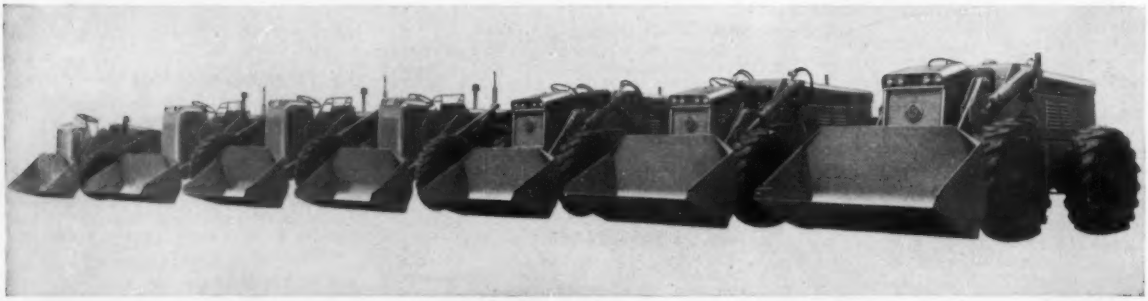
Seven models—34 to 130 hp—up to 9,000-lb carry capacity. Torque converter drive in every model.



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(Continued from page 253)

Oct. 13-16—Houston, Texas
UNITED STATES CIVIL DEFENSE COUNCIL. Annual Meeting (Shamrock Hotel). Sec., Elliott R. Jackson, Municipal Auditorium, Atlanta, Ga.

Oct. 14-16—Des Moines, Iowa
AMERICAN WATER WORKS ASSOCIATION—Iowa Section. Annual Meeting (Hotel Fort Des Moines). Sec.-Treas., J. J. Hall, Dubuque, Iowa.

Oct. 14-16—Green Bay, Wis.
LEAGUE OF WISCONSIN MUNICIPALITIES. Annual Meeting (Hotel Northland). Exec. Dir., Ed Johnson, 30 E. Johnson St., Madison 3, Wis.

Oct. 18-21—San Francisco, Calif.
LEAGUE OF CALIFORNIA CITIES. Annual Meeting (St. Francis and Palace Hotels). Exec. Dir., Richard Carpenter, Hotel Claremont Bldg., Berkeley, Calif.

Oct. 18-23—Washington, D. C.
AMERICAN SOCIETY OF CIVIL ENGINEERS. Annual Convention (Statler Hotel). Exec. Sec., William H. Wisely, 23 W. 39th St., New York 18, N. Y.

Oct. 19-22—Las Vegas, Nev.
INTERNATIONAL MUNICIPAL SIGNAL ASSOCIATION. Annual Convention (Stardust Hotel). Exec. Sec., Irvin Shulsinger, 130 W. 42nd St., New York 36, N. Y.

Oct. 19-23—Atlantic City, N. J.
AMERICAN PUBLIC HEALTH ASSOCIATION Annual Convention (Convention Hall) Exec. Dir., Berwyn F. Mattison, M.D., 1790 Broadway, New York 19, N. Y.

Oct. 22-24—Atlantic City, N. J.
AMERICAN WATER WORKS ASSOCIATION—New Jersey Section. Annual Meeting (Madison Hotel). Sec.-Treas., A. F. Pleibel, 683 Prospect St., Maplewood, N. J.

***Oct. 22-24—Columbus, Ohio**
STREET MAINTENANCE AND SANITATION OFFICIALS OF OHIO. Annual Conference (Neil House). Sec-Treas., William H. Moore, 71 North Union Street, Akron, Ohio.

Oct. 24-29—St. Louis, Mo.
INTERNATIONAL CITY MANAGERS' ASSOCIATION. Annual Convention (Chase and Park Plaza Hotels). Exec. Dir., Orin F. Nolting 1313 E. 60th St., Chicago 37, Ill.

Oct. 25-27—Kansas City, Kans.
NATIONAL ASSOCIATION OF MUNICIPAL UTILITIES. Annual Convention (Town House Hotel). Asst. Sec., A. D. McGuire. P. O Box 99, Overland Park, Kans.

Oct. 25-29—Houston, Texas
NATIONAL TAX ASSOCIATION. Annual Conference (Rice Hotel). Exec. Dir., Walter J. Kress, National Tax Association, 905 Payne-Shoemaker Bldg., Harrisburg, Pa.

Oct. 26-28—Minneapolis, Minn.
NATIONAL HIGHWAY CONFERENCE FOR COUNTY ENGINEERS AND OFFICIALS. Annual Meeting (Leamington Hotel). Exec. Vice Pres. Louis W. Prentiss, American Road Builders' Association, World Center Bldg., Washington 6, D. C.

Oct. 26-30—Monticello, Ill.
AMERICAN WATER WORKS ASSOCIATION—Illinois and Indiana Annual Water Works Management Short Course (Allerton Park). For information, address T. E. Larson, State Water Survey Division, Urbana, Ill.

Oct. 26-30—San Antonio, Texas
INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS. Annual Meeting (Hotel Hilton). Managing Director, Hall Colling, Suite 1120, 610 South Broadway, Los Angeles, Calif.

Oct. 28-30—Dayton, Ohio
AMERICAN WATER WORKS ASSOCIATION—Ohio Section. Annual Meeting (Biltmore Hotel). Sec., J. Howard Bass, Robert R. McGivern & Associates, 1771 W. 5th Avenue, Columbus, Ohio.

Oct. 29-31—Coos Bay, Ore.
PACIFIC NORTHWEST SEWAGE AND INDUSTRIAL WASTES ASSOCIATION. Annual Meeting (Tioga Hotel). Sec.-Treas., G. H. Dunstan, Box 176, Pullman, Wash.

Oct. 29-31—Pensacola, Fla.
FLORIDA LEAGUE OF MUNICIPALITIES. Annual Meeting (San Carlos Hotel). Exec. Sec., Gordon T. Butler, 218 W. Adams St., Rm., 301, Jacksonville, Fla.

***Nov. 2-5—Mexico City, Mexico**
AMERICAN CONCRETE INSTITUTE. Regional Meeting (Continental Hilton and Del Prado Hotels). For information, address Charles L. Cousins, P. O. Box 4754, Redford Station, Detroit 19, Mich.

***Nov. 4-6—Roanoke, Va.**
AMERICAN WATER WORKS ASSOCIATION—Virginia Section. Annual Meeting (Roanoke Hotel). Sec., E. H. Ruehl, R. Stuart Royer and Associates, 15 W. Cary St., Richmond, Va.

***Nov. 5-7—Nome, Alaska**
LEAGUE OF ALASKA CITIES. Annual Meeting (City Hall). Exec. Sec., Mrs. Lucy Mick, Box 1764, Palmer, Alaska.

***Nov. 7-10—Springfield, Ill.**
ILLINOIS MUNICIPAL LEAGUE. Annual Meeting. Exec. Dir., A. L. Sargent, 537 S. 4th St., Springfield. Ill.

***Nov. 9-11—Durham, N. C.**
AMERICAN WATER WORKS ASSOCIATION—North Carolina Section jointly with North Carolina Sewage and Industrial Wastes Association. Annual Meeting (Washington Duke Hotel). Exec. Sec., D. York Brannock, 1703 Woodland Ave., Burlington, N. C.

***Nov. 15-18—Scranton, Pa.**
PENNSYLVANIA LEAGUE OF CITIES—Annual Meeting (Hotel Casey). Exec. Dir., John N. O'Neil, 506 State Street Bldg., Harrisburgh, Pa.

Nov. 15-18—Springfield, Mass.
NATIONAL MUNICIPAL LEAGUE. National Conference on Government (Sheraton Kimball Hotel). Asst. Dir., Allen H. Seed Jr., 47 E. 68th St., New York, N. Y.

***Nov. 15-18—Tampa, Fla.**
AMERICAN WATER WORKS ASSOCIATION—Florida Section jointly with Florida Sewage and Industrial Wastes Association. Annual Meeting (Hillsboro Hotel). Sec.-Treas., J. G. Simmons, Box 1311, West Palm Beach, Fla.

***Nov. 16-20—Stillwater, Okla.**
OKLAHOMA WATER, SEWAGE AND INDUSTRIAL WASTES ASSOCIATION. Annual Short Course and Industrial Wastes Conference (Student Union). Sec.-Treas., H. M. Crane, 3400 N. Eastern, Oklahoma City. Okla.

***Nov. 17-20—Atlantic City, N. J.**
NEW JERSEY STATE LEAGUE OF MUNICIPALITIES. Annual Meeting (Chalfonte-Haddon Hall). Exec. Dir., Robert H. Fust, 603 Trenton Trust Bldg., Trenton, N. J.

Nov. 29-Dec. 2—Denver, Colo.
AMERICAN MUNICIPAL ASSOCIATION. Annual Convention (Brown Palace Hotel). Exec. Dir., Patrick Healy, Jr., 1612 K St. N.W., Washington 6, D. C.

***Dec. 2-3—Washington, D. C.**
ASPHALT INSTITUTE. Annual Meeting (Shoreham Hotel). For information address Asphalt Institute, University of Maryland, College Park, Md.

***Dec. 3-4—Washington, D. C.**
THE TAX INSTITUTE. Annual Symposium (Mayflower Hotel). Exec. Dir., Mabel Walker, 457 Nassau St., Princeton, N. J.

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MUNICIPAL AND CIVIC PUBLICATIONS

Publications on these pages are available from the addresses indicated and are usually free unless a price is given.

Swimming Pools Of the World

MODERN SWIMMING POOLS OF THE WORLD—*By Dr. Dietrich Fabian, National Pool Equipment Co., Lee Highway, Florence, Ala.* 148 *pp.* 1958. $10.

This book of swimming pools around the world should inspire the thinking of any municipality. It shows how to make a swimming pool fit into a city's over-all recreational program—and at the same time have the facilities needed for competitive meets. It gives examples of designs and layouts that would make a municipal swimming pool an eye-catching artistic attraction. The book has 181 pictures with 22 in color, 208 plans and 7 construction tables.

Urban Counties

THE 1959 URBAN COUNTY CONGRESS OF THE NATIONAL ASSOCIATION OF COUNTY OFFICIALS—*Edited and compiled by Philip Warren, Jr. National Association of County Officials, 1001 Connecticut Avenue N.W., Washington 6, D. C.* 1959. 152 *pp.* $3.

For the first time, officials of urban counties got together to discuss their peculiar problems in this era of urban growth. Actually, this period is characterized not so much by the creation of new cities as by the transformation of former rural governmental units into urban areas. Chief of these have been the county governments. Today, instead of being content to maintain county roads, a county home for old people, and a picturesque sheriff's office, they have to maintain water, sewerage, airport facilities, mass transportation; they have to coordinate efforts with other groups in the metropolitan area, make urban capital improvements, parks, arrange civil defense organization. All these were discussed in the first Urban County Congress and the significant papers are reproduced in this little book.

City Management

MANAGEMENT PRACTICES FOR SMALLER CITIES—*International City Managers' Association, 1313 E. 60th St., Chicago 37, Ill.* 1959. 429 *pp.* $7.50.

This most recent addition to ICMA's Municipal Management Series is modestly titled indeed. The administrator of any city would find much of value in this book. Its chapters cover plannng, finance, personnel, street maintenance, street cleaning and snow removal, lighting, refuse collection, sewerage, water, police, fire, parks, and public relations. All the material is presented in a practical, usable manner. This is a reference book that every city should have.

A Success Story of an Integrated Neighborhood

A NEIGHBORHOOD FINDS ITSELF—*By Julia Abrahamson. Harper & Brothers, 49 East 33rd Street, New York 16, N. Y.* 1959. 369*pp.* $5.

This is a success story of a slum neighborhood on Chicago's Southside — Hyde Park-Kenwood Project — that, through its own efforts, became a self-respecting, wholesome residential community. It is told with warmth and understanding by the one person who contributed perhaps most largely in time and effort in this work of reclamation.

First Water Quality Report

NATIONAL WATER QUALITY NETWORK, ANNUAL COMPILATION OF DATA, OCTOBER 1, 1957-SEPTEMBER 30, 1958—*U. S. Department of Health, Education, and Welfare, Public Health Service. Public Health Service Publication No. 663. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.* 1959. 239 *pp.* $1.50.

A progress report on the first year's operation in the collection of basic water quality data by the Public Health Service under the Federal Water Pollution Control Act. The report covers data collected from 51 sampling stations located throughout the United States. Water examinations covered radioactivity, plankton organisms, coliform organisms, organic chemicals, and biochemical, chemical, and physical measurements. The purpose of the program is to collect data and other information relative to water pollution and its prevention and control.

Out-of-City Services

EXTENSION OF MUNICIPAL SERVICES TO FRINGE AREAS—*By Eugene H. Denton. Governmental Research Center, University of Kansas, Lawrence, Kan.* 1959. 32 *pp.*

When urban areas grow beyond fixed political boundaries, the people in these growing areas ask for urban services that the central city can provide most efficiently. The central city can provide them in either of two ways:

- by annexation, often opposed by the fringe areas or
- by extending the services, charging a suitable fee.

The study shows that cities in Kansas have no particular trouble making equitable agreements with their fringe areas for services such as water supply and sewerage. Extenson of fire protection, however, is much more troublesome, since the expense is high and fringe residents cannot be convinced that first-class protection is necessary. The author confined his study to cities with populations of 10,000 or more.

Property Taxes

TAXABLE PROPERTY VALUES IN THE UNITED STATES; 1957 *Census of Governments, Vol. V.—U. S. Bureau of the Census. Government Printing Office, Washington 25, D. C. June* 1959. 145 *pp. Paperbound.* $1.

This interesting little volume tells why tax problems are so complex across the nation. While it does not deal with individual cities, and with scholarly cowardice ignores valuations on non-taxed properties, non-profit hospitals and educational institutions, it nevertheless makes fascinating reading. For example, the states where the property tax is greatest per person include Montana and Kansas, as well as California, New York, New Jersey, Connecticut, Massachusetts and Rhode Island. The state that complicates local government financing the most by granting the most in homestead exemptions is Florida, whose grants are over half the nation's total. Local governments in Indiana get the most revenue from property taxes of any state in the union—97.6%. Alabama local governments get the least—59.0%. Washington, D. C., a city without a state, gets 38.6%.

Manual for Concrete Users

CALCIUM CHLORIDE IN CONCRETE—(MANUAL CM-1)—*Third edition. Calcium Chloride Institute, 909 Ring Building, Washington 6, D. C.* 1959. 64 *pp. No charge.*

A ready reference to quantitative data on the effects of calcium chloride in concrete. It consists of six separate parts covering major effects, technical data, industry use, how to use, specifications, and special conditions. The pamphlet includes numerous charts and illustrations referring to the various benefits of calcium chloride as it is used in modern concrete construction.

Law Enforcement Photography

PHOTOGRAPHY IN LAW ENFORCEMENT—*By Eastman Kodak Company, Rochester 4, N. Y.* 1959. 82 *pp.* $1.25.

The little paperbound book, which replaces a volume with the same title published in 1948, covers a wide area of criminal detection and investigation through photography. The original text is by Charles E. O'Hara of the New York City Police Department. Information on arson was supplied by John Kennedy, General Arson Investigation, Chicago, Ill.

The concluding chapters deal with the technical preparation of courtroom exhibits, the role of the police photographer as a witness, the parts played by photography and especially films in police training, crime prevention, and public relations. A final section contains diagrams for two darkroom layouts, one designed for a small police department, the second for a large city.

Developing Urban Techniques

URBAN PROBLEMS AND TECHNIQUES-$1—*Edited by Perry L. Norton. Chandler-Davis Publishing Co., P. O. Box 36, West Trenton, N. J.* 1959. 250 *pp.* $3.65.

A rambling discussion of limited portions of the urban field, presented by a series of authors with no real effort demonstrated to tie the discussions together. Portions of it, however, are helpful. Among these is the chapter on annexation, the study of central business districts, and those on the revised Federal Housing Act. industrial performance standards, and house-trailer zoning. The chapter on utilities deals only with electric power and ignores gas, water, and telephone; its author is employed by a privately-owned electric utility to promote and assist local community planning. He relates with frankness and candor that his company's interest in planning is to build more efficient power loads.

Water Works Management

A TRAINING COURSE IN WATER UTILITY MANAGEMENT, AWWA MANUAL M5—*American Water Works Association, Inc., 2 Park Ave., New York* 16. 1959. 188 *pp.* $2.

This paperbound volume is the first in a projected series of educational manuals being prepared under the direction of AWWA's Committee on Education. The 22 chapters cover such topics as rate schedules, service regulations, legal responsibilities, accounting, office operation, safety programs, and financing.

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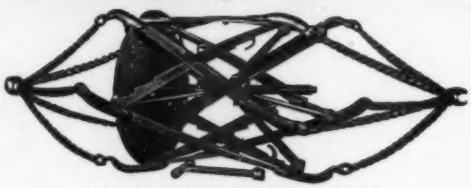

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Urban Renewal

NEW LIFE FOR CITIES AROUND THE WORLD—*Edited by J. Marshall Miller, Columbia University. Books International, 1186 Broadway, New York 1, N. Y. 1959. 233 pp. Paperbound.* $4.

This brings together summaries of the papers and other material presented at the International Seminar on Urban Renewal held in The Hague last August. It reports activities in urban renewal all over the world.

Municipal Administration

THE MUNICIPAL YEAR BOOK, 1959, *26th Edition—Edited by Orin F. Nolting and David S. Arnold. International City Managers' Association, 1313 East 60th Street, Chicago 37, Ill. June 1959. 606 pp. $10 postpaid.*

The 1959 edition of this useful reference introduces special sections on urban renewal and economic classification of cities. The urban renewal section shows comprehensive information for 252 cities with a population of over 5,000 and covers programs, organizations, number of employees, expenditures, elements approved in the workable program, and number of persons relocated because of urban renewal projects. Data on economic classification are shown for standard metropolitan areas and all cities over 10,000 for economic base, metropolitan status, rent level, per cent of males in white collar jobs, manufacturing ratio, and employment-residence ratio. The data provide useful intercity comparisons on economic base.

New material is presented on special assessments in 876 cities with a population of over 10,000 — improvements financed by special assessment, methods of financing, allocation of costs to property owners, city participation in financing, and the latest issue of special assessment bonds. The article on urban counties reviews 1958 developments in inter-governmental cooperation and summarizes programs and services of 43 state associations of county officials. A new section on traffic engineering shows, for 1,037 cities with a population of over 10,000, information on ordinances, traffic control devices, and traffic surveys and planning.

In the regular sections new information is presented on special censuses for cities over 5,000 in population, annexations and other metropolitan area developments, zoning requirements for residential lots, and fire and police data on education and training requirements. In addition, it reports significant developments in personnel, finance, public health, public works, planning, police, fire, and other programs.

A Study of America's Water Problems

TECHNOLOGY IN AMERICAN WATER DEVELOPMENT—*By Edward A. Ackerman and George O. G. Lof. The Johns Hopkins Press, Baltimore 18, Maryland. 1959. 710 pp.* $10.

An exploratory study of America's water problems that examines virtually every aspect of water—its sources, location, conversion, uses, management and economics. The book covers every feature of this priceless commodity from water demands of industry to the future use of sea water.

The greater part of the study treats the proven technology that influenced water development in the past or is still effective in shaping its course. It also treats the emerging technology of today.

Rather than provide an exhaustive description of all the technical phenomena that have some bearing upon water development, they have been classified as they affect the development and operational management of water resources, with illustrations for each class provided. The study presents 31 case descriptions treated as briefly as is consistent with clarity, using non-technical language wherever possible.

Public Health

PREVENTIVE MEDICINE—*By Herman E. Hilleboe, M.D., Commissioner of Health, and Granville W. Larimore, M.D., Deputy Commissioner of Health, State of New York. Department of Health, Albany, N. Y. 1959. 731 pp.* $12.

A good solid textbook for local health departments with chapters that will interest the sanitary engineer. It discusses everything from alcoholism to venereal disease; from air pollution to sewage purification. The authors advise keeping people healthy rather than waiting until they are sick and then curing them.

U. S. Government

U. S. GOVERNMENT ORGANIZATION MANUAL—*Superintendent of Documents, Government Printing Office, Washington 25, D. C. Revised as of June 1959. 803 pp.* $1.50.

An official organization handbook of the federal government. It contains sections on the legislative, judicial and executive branches. It outlines the authority, purpose, functions and activities of each agency. It lists more than 4,200 key officials. It has a 38-page section containing brief histories of federal agencies whose functions have been abolished or transferred since March 4, 1933.

Swimming Pools

SWIM IN DRINKING WATER—*Wallace & Tiernan Inc., 25 Main Street, Belleville 9, N. J. June 1959. 52 pp. No charge.*

Any community that operates or plans to build and operate swimming pools will find this booklet full of helpful information. It is divided into three parts. The first presents essentials of swimming pool chlorination in easy-to-understand language. The second describes and illustrates the chemical feed equipment used in large and small pools, as well as the test equipment that confirms the purity of the water. The third presents the American Public Health Association's instructions on how to design and operate swimming pools.

Other Reports Received

ADMINISTRATION & GOVERNMENT

GEORGIA—Summary of Laws Affecting Local Government. Institute of Law & Government, School of Law, University of Georgia, Athens, Ga. 1959. 39 pp. $1.

NEW HAVEN, CONN.—Annual Report 1958—New Haven Citizens Action Commission, 177 Church Street, New Haven 10, Conn. 1959. 46 pp. No charge.

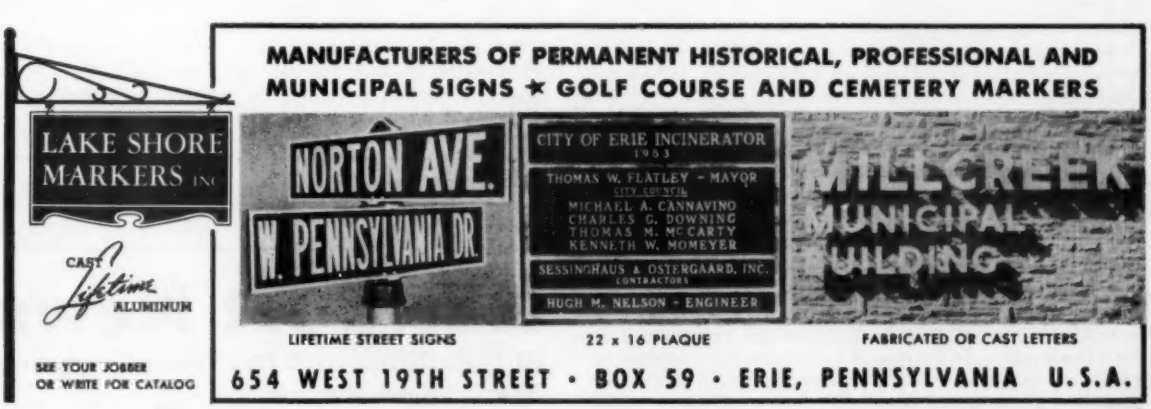
PENNSYLVANIA—Directory of Pennsylvania Council-Manager Municipalities and Municipal Managers. Institute of Local Government, Graduate School of Public and International Affairs, University of Pittsburgh, Pittsburgh 13, Pa. 1959. 91 pp. $1.

VIRGINIA—Salaries of Municipal Officials in Virginia Cities. League of Virginia Municipalities, 905 Travelers Building, Richmond, Va. 1959. Unpaged. $1. (Free to Virginia municipal officials).

WASHINGTON—New Notes and Legal Opinions; 1959 Salaries of Washington Cities. Association of Washington Cities in cooperation with the Bureau of Governmental Research and Services. University of Washington, Seattle 5, Wash. 1959. 24 and 18 pp. No charge.

AIR POLLUTION

CHICAGO, ILL.—Air Pollution Control—Municipal Code of Chicago. Office of Mayor, Municipal Building, Chicago, Ill. 1959. 31 pp. No charge.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COLUMBUS, OHIO—Annual Report on Air Pollution. Division of Smoke Regulation and Inspection, Department of Safety, Columbus, Ohio. 1959. 15 pp. No charge.

NEW JERSEY—Air Pollution Control in New Jersey. New Jersey Air Pollution Commission, New Jersey Department of Health, Government Building, Trenton, N. J. 1959. 21 pp. No charge.

ANNUAL REPORTS

SEATTLE, WASH.—Seattle City Light—Annual Report for the Year 1958. Office of Mayor, Municipal Building, Seattle, Wash. 1959. 33 pp. No charge.

PHILADELPHIA, PA.—Department of Public Property Annual Report. Department of Public Property, 1303 City Hall Annex, Philadelphia, Pa. 1959. 28 pp. No charge.

FINANCE & TAXATION

COLORADO SPRINGS, COLO.—Annual Report of the City Auditor. Office of Mayor, City Hall, Colorado Springs, Colo. 1959. 55 pp. No charge.

SAN ANTONIO, TEXAS—Financial Report. Office of City Administrator, City Hall, San Antonio, Texas. 1959. 42pp. No charge.

EAU CLAIRE, WIS.—Financial Report. Office of City Manager, City of Eau Claire, Wis. 1959. 56pp. No charge.

MINNEAPOLIS, MINN.—City of Minneapolis Budget for 1959. Board of Estimate and Taxation, City Hall, Minneapolis, Minn. 1959. 96pp. No charge.

TENNESSEE—Revenues and Expenditures by William Chaffin and John B. Berg. Municipal Technical Advisory Service, University of Tennessee, Knoxville, Tenn. 1959. 45 pp. No charge.

PLANNING, ZONING & HOUSING

GENERAL—Annual Report of the National Capital Housing Authority. National Capital Housing Authority, Washington 25, D. C. 1959. 33 pp. No charge.

GENERAL—Roots of City Planning by George H. Herrold. St. Paul Public School Department, St. Paul, Minn. 1958. 16pp. $1.25.

KENWOOD, ILL.—North Kenwood-Oakland Community Planning Program. Kenwood-Ellis Community Center, 4608 S. Greenwood Ave., Chicago 15, Ill. 1959. 75c each. 48c each in lots of 10.

LAPORTE, IND.—Economic Base Existing Land Use Population. Prepared by City Planning Associates, 223 Lincolnway East, Mishawaka, Ind. 1959. Mimeographed. Illustrated with maps.

LUBBOCK, TEX.—Comprehensive Plan and Population Report. The Department of Planning, Lubbock, Tex. 1959. 99 pp.

MARION, IND.—Central Business District. The Metropolitan Planning Dept., Marion County, Ind. 43pp. Illus. with maps and diagrams. No charge.

MISHAWAKA, IND.—A Report on the Master Plan. City Planning Commission. Office of Mayor, City Hall, Mishawaka, Ind. 1959. No charge.

NEW YORK, N. Y.—Cadman Plaza—Slum Clearance Plan. New York City Housing Authority, 299 Broadway, New York 7, N. Y. 48pp. No charge.

NORWAY, ME.—Master Plan Report, Norway Planning Board, Norway, Maine. 1959. 18pp. No charge.

WASHINGTON, D. C.—Meeting the Problems of Metropolitan Growth in the National Capital Region. U. S. Government Printing Office, Washington 25, D. C. 1959. 54pp.

WATER

CHICAGO—Annual Report, Department of Water and Sewers, Office of Mayor, Municipal Building, Chicago, Ill. 1959. 31 pp. No charge.

REPRESENTATIVE MUNICIPAL BOND ISSUES

From July 8th to August 3rd, 1959

Date of Issue	*Locality*	*Amount in $1000*	*Purpose*	*Term Yrs. to Maturity*	*Rate of Int.*	*Yield %*
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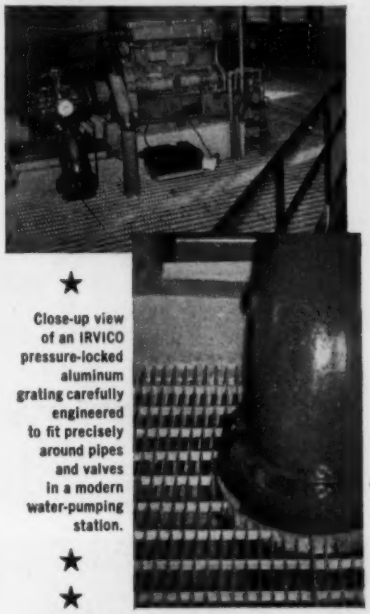
7/ 8/59	Mobile Co., Ala.	3,900	Road and Bridge	3 to 25	4½ to 5	4.5287
7/14/59	Amherst, N. Y.	646	Water, Gen. Improve.	10 & 15½	4	3.92
7/14/59	New York, N. Y.	65,000	Tax Anticipation	3 mos.	..	2½
7/16/59	Mason Co., Ky.	527	School Building Rev.	..	..	4.2399
7/20/59	So. Central Cambria Co., Sch. Auth., Pa.	2,045	School Revenue	4 to 17	3½ to 4½	5.04
7/21/59	Anaheim Sch. Dist., Calif.	500	School	1 to 25	3¾ to 4	3.9059
7/21/59	Erie Parking Auth., Pa.	1,160	Parking Revenue	2 to 40	3.15 to 4⅛	4.613
7/22/59	Buffalo, N. Y.	2,800	Bond Anticipation	7½ mos.	..	2.26
7/22/59	Madison, Wis.	1,000	Waterworks, Rev.	14½	4	5.682
7/23/59	New Bedford, Mass.	500	Tax Anticipation	3½ mos.	..	2.29
7/27/59	Chandler, Ariz.	485	Water and Sewer Rev.	3 to 26	4½ to 4½	4.22386
7/28/59	Ada, Okla.	900	Gen. Obl. Waterworks	3 to 16	3½ to 3¾	3.5709
7/29/59	Newport, R. I.	700	Water	10 to 36	3.70 & 4	4.0273
7/30/59	Santa Rosa Co., Fla.	2,000	Bridge	2 to 21	4.3 to 6	4.4316
8/ 3/59	Elmhurst, Ill.	525	Water & Sewer Revenue	6 to 20	3¾ to 4	3.952
8/ 3/59	Urbana, Ill.	2,275	Storm Sewer	6 to 19	3½ & 4	3.316

Compiled from **THE BOND BUYER**

PRECISION AND SKILL



★ Close-up view of an IRVICO pressure-locked aluminum grating carefully engineered to fit precisely around pipes and valves in a modern water-pumping station. ★ ★

GO INTO A GOOD GRATING

When you specify IRVICO grating, you receive the benefit of engineering and manufacturing skill developed during more than 57 years of experience in the production of grating. Each IRVICO order is given careful engineering attention. Experienced shop craftsmen execute your order with finesse, and our inspectors permit no grating to be shipped unless it meets your specifications and our high standards. This insures high quality grating, an excellent fit, and no extra installation costs. Catalog on request

IRVICO

IRVING SUBWAY GRATING CO., Inc.
Originators of The Grating Industry Est. 1902
Offices and Plants at:
5030 27th St., Long Island City 1, N. Y.
1830 10th St., Oakland 20, California

Step In *Delivery Body*

For Increased Public Services

Boyertown "Better Built" Truck Bodies

Merchandiser *Delivery Body*

Increased services performed by Municipal Offices and Public Works Departments demand functionally designed truck bodies to meet the growing variety of service needs. Truck bodies that are built to last and provide maximum return per dollar invested.

Boyertown, a builder of truck bodies for local, state and federal governments for many years, offers fourteen basic standard production body models of various types and sizes that are suitable for practically all public service needs.

This complete line of truck bodies have loadspace dimensions from 6′ to 18′ long, with capacities from 176 to 862 cu. ft., and may be mounted on flat back cowl or forward control type truck chassis of your choice.

Today's new model truck bodies, built of all High Strength Alloy Steel are functionally designed and built to serve the Purchaser, for value; the Driver, for convenience; and the Maintenance Man, for serviceability. Boyertown's "Better Built" truck bodies meet today's increased public service needs.

Write for full descriptive "Better Built" Truck Body information today.

BOYERTOWN AUTO BODY WORKS, Inc.
BOYERTOWN, PENNA

Designers and Builders of Boyertown "Better Built" Bodies Since 1872

Phone Boyertown FOrest 7-2146
TWX Boyertown, Pa. 59

Hauls more, loads and unloads faster, operates at less cost

A new sanitary refuse compactor unit, available in 16- and 20-yard models, mounted or unmounted, features a unique shell-shaped tank, to reduce over-all height and fall-back of packed refuse and to provide a lower center of gravity.

Mechanism is completely enclosed, and body, watertight doors and packing blade rear doors are of corrosion- and rust-resistant alloy steel.

Heart of the unit is its high-strength alloy-steel plow-type blade that projects into the bottom channel to get under the load and push it upward and to the side for maximum use of tank space. It is mounted on six ductile iron rollers, soundly reinforced and capable of all and more of its 15-ton pressure. The bottom channel and slides on the side and top of the tank prevent twisting or binding of the blade, even when the load is badly unbalanced. Compaction runs 2½ to 4 times the bulk. Liquid capacity for the 16-yard model is 700 gallons without drains, sumps, etc.

Loading doors and gates on both sides of the body are wide enough for large items. Upper loading doors are roller-mounted; lower loading gates adjust in height to suit the load and loader.

The compactor itself can be operated from either the cab or the ground by means of control levers or optional pushbutton controls on both sides of the unit. By throwing the compactor lever the long-stroke compactor blade travels the full length of the tank, ejecting the entire load in a tightly compressed, tube-like mass, without "dumping action" or truck motion.

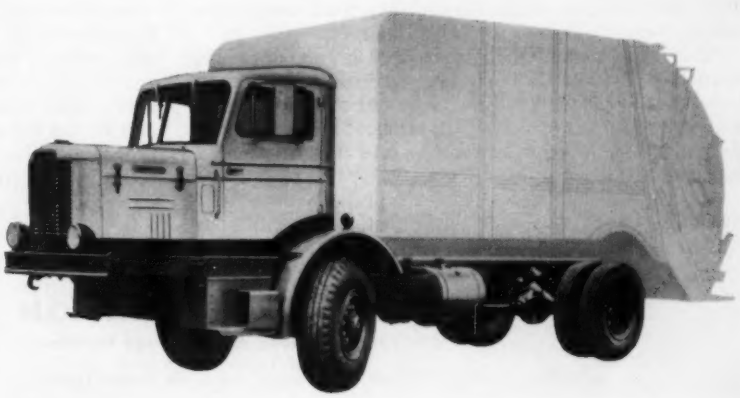
The compactor units fit any standard cab, cab-forward or tilt-cab chassis with minimum G.V.W. and C.A. length. For additional information on these refuse bodies, write PAX-IT EQUIPMENT CO., 814 SECOND AVENUE BLDG., SEATTLE 1, WASH., or use the Post Card on Page 56. Circle No. 926.

50-50 Refuse Hauler

A careful survey of the needs of refuse haulers, conducted over a number of years by Oshkosh Motor Truck, Inc., has culminated in a specially designed chassis to accommodate a 24- or 25-yard compaction-type refuse body, with optional wheelbases and frame lengths available for other type bodies. This permits hauling of up to 25 yards of compacted material *on two axles.*

The manufacturer's list of chassis features developed especially for refuse removal include:

- **a wheelbase of approximately**



Concrete streets like Crescent Drive are a joy to motorists

425 blocks paved in 8 years

Duncan, Oklahoma, chose concrete to get streets good for 50 years and more!

Cities and villages everywhere are finding that concrete is the popular and economical answer for street improvement programs. Duncan, Oklahoma, for example. Early in 1951 its Chamber of Commerce appointed a committee. They worked with the mayor and city commission on a master paving program for Duncan streets.

They studied pavement costs and life expectancy, learned that concrete is the one pavement with load-bearing strength that can be computed mathematically to match future traffic, last 50 years and more. Records showed that upkeep costs for concrete run as much as 60% lower than for asphalt.

All this was explained to Duncan property owners at special meetings. And with enthusiastic approval from cost-conscious taxpayers, the committee's decision was unanimous for concrete! Since then it has been concrete all the way for Duncan.

City officials and Duncan citizens are proud of their modern concrete streets . . . clean, bright and attractive. Smooth-riding. And with the extra safety of concrete's skid-resisting surface and high night visibility.

Thrifty concrete is the preferred pavement for streets everywhere, with true economy for taxpayers, both today and in the future. If you are planning a street paving program, write for free literature—technical and non-technical. Distributed only in the U.S. and Canada.

PORTLAND CEMENT ASSOCIATION
Dept. A9-4, 33 West Grand Ave., Chicago 10, Illinois
A national organization to improve and extend the uses of concrete

MODERN Concrete

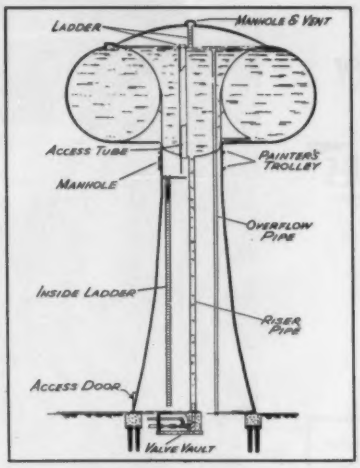
160 inches to provide minimum turning and maximum maneuverability;

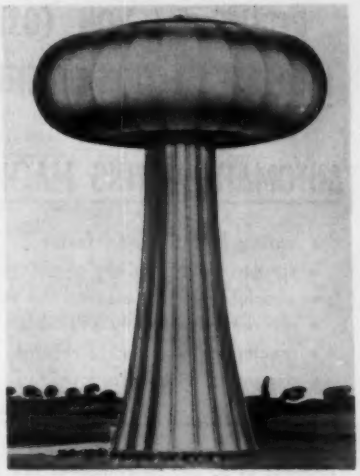
- proper weight distribution to front and rear axles (50% each) with extra large front tires for desired load capacity and flotation factors;
- special frame and suspension, which provides a low height of frame at rear of truck and so permits a lower mounting of the packer body, easier filling of packer bucket, and a lower and safer center of gravity;
- chassis and driveline components from the cab to the rear of the frame, installed below the level of the top frame flange, to assure an unobstructed area for easy and economical mounting of the packer body;
- a cab designed and constructed to provide maximum ease of entry, comfort, and optimum vision;
- assembly of engine and chassis components to permit ready accessibility for inspection, maintenance and repairs.

The chassis' cantilevered front end places more weight ahead of the front axle, and so minimizes the tendency of the front end of the truck to lift during dumping operations. All-wheel drive is said to assure necessary traction ability for virtually all situations, particularly in bad dumps and over unimproved terrain. Less wheel slippage from the all-wheel drive feature results in less tire wear and cutting.

Another advantage offered by the 50-50 Refuse Hauler is its two-axle 4x4 which, in comparison with a three-axle 6x4, does not have the tire sliding and scuffing normally experienced on the tandem in tight turns. In states where tandem axles are penalized (sometimes by as much as two cents per mile wheel tax), the Oshkosh two-axle 4x4 eliminates added expense.

The Oshkosh chassis is distinctive and rugged in appearance. All its components are designed and precision manufactured with ample safety factor. When combined with a suitable body, the Oshkosh chassis can be expected to be of significant value to municipal refuse removal operations. For additional information on this specially-built refuse chassis, write Oshkosh Motor Truck, Inc., Oshkosh, Wis., or use the Post Card on Page 56. Circle No. 925.





The Aquatore is designed for both municipal and industrial use. Its central supporting column is a "dry riser" which is not used for water storage except in the topmost portion, at the level of the torus-shaped tank.

Doughnut-Shaped Water Tank

A torus-shaped water tower, appropriately called the Aquatore, features a single central supporting column and is said to be the first new design in large-capacity elevated water towers in almost a quarter-century. Its reported capacity range is from 300,000 gallons to 3 million gallons or more, although 4 million gallons is considered the largest practical capacity for most applications.

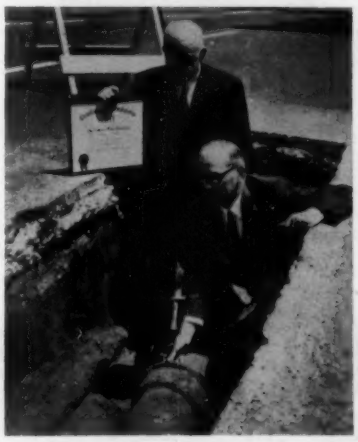
The Aquatore eliminates unsightly struts and tie-rods required on conventional tanks for large-capacity installations, and reportedly provides upwards of 35% less variation in water pressure. Since pumping facilities can be installed within the column, no pumphouse is needed. Other advantages include less height (because of lower head range), reduction in snow-load and wind-load.

The Research and Development Department of Graver Tank & Mfg. Co., Division of Union Tank Car Co., 4809 Tod Ave., East Chicago, Ind., developed the Aquatore in cooperation with Dr. Rolland Sturm of Sturm & O'Brien, Consulting Engineers, Auburn, Ala. For additional information, use the Post Card on Page 56. Circle No. 948.

San Francisco Joins CIPRA Century Club

A feature of the recent annual convention of The American Water Works Association was the uncovering of this section of cast iron water main, laid in 1849, at First and Tehama Streets in San Francisco, Calif. It was part of the ceremonies inducting the Golden Gate city as the 68th United States city to membership in the Century Club of the Cast Iron Pipe Research Association.

Inspecting the pipe are Thomas F. Wolfe, CIPRA managing director, holding certificate of membership, and James H. Turner, general manager and chief engineer of the San Francisco Water Department.



REDUCE ELECTION COSTS
INCREASE ELECTION EFFICIENCY
with
AUTOMATIC VOTING MACHINES

- voting is easier and faster
- spoiled ballots totally eliminated
- absolute secrecy assured the voter
- returns immediately available
- mechanically accurate returns
- expensive recounts eliminated

Available for Service Clubs or other interested gatherings by 60 day reservation—a new 18 minute 16 mm color film illustrating potential benefits of Automatic Voting Machines.

PRODUCTS FOR THE PUBLIC GOOD

AUTOMATIC VOTING MACHINE

division of Rockwell Manufacturing Company

Jamestown, N. Y.

FEMALE DIE LOCKED IN SHOE

MALE DIE LOCKED IN SHOE

Backed by over 40 years of sign manufacturing experience

Why DEEP Embossing Gives Motorists Greater Protection!

The embossing process upraises letters to catch and reflect light, presenting three-dimensional legibility. Such signs are easier to read at greater distances than flat-painted, two-dimensional letters . . . giving motorists more reaction time.

In strictest conformance to U.S. Sign Standards, Lyle's *deep embossing* with perfect dies provides sharper, clearer and more accurately defined letters and symbols. There's no chance for variation—perfectly proportioned dies turn out uniformly perfect letters *every time!*

What's more, in adding extra legibility, Lyle's *deep embossing* increases strength and rigidity of signs in much the same way that corrugating does to other metal products.

At left you see unretouched photos of male and female dies for a Lyle "Yield Right of Way" Sign. You can see from the height of one and the depth of the other that embossing will be *deep*. (Letters stand out in bold relief from the sign background—making even an unpainted sign highly legible without benefit of contrasting enamels.) This *deep embossing* is just one more reason why you'll know you're getting the best when you buy Lyle Signs!

Write today for your copy of the Lyle 36-page, fully-illustrated Sign Manual, No. B-55.

Lyle SIGNS, INC.

2720 University Avenue S.E.
Minneapolis 14, Minnesota

High-Speed Synchronous Vertical Motors

These motors are being offered in a wide range of enclosures and in 150 hp and up. They are recommended where high horsepower and low speed ratings are demanded under rigorous and exacting requirements, constant speed, continuous duty installations.

A double-end ventilation system assures maximum cooling efficiency, and in addition to standard A, B and H insulations, special materials, such as silicone rubber, acrylic and epoxy resins, to meet unusual moisture, ambient and chemical conditions can be supplied.

Rotors are designed to resist torsional and centrifugal stresses. Assemblies are dynamically balanced and tested under load conditions to assure proper operating characteristics.

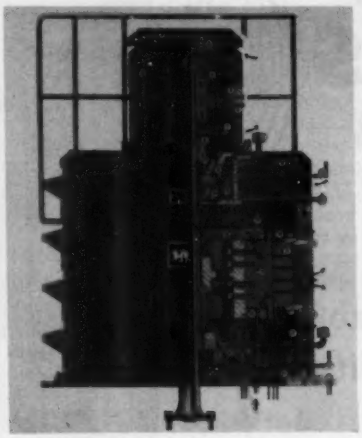
Routine maintenance and inspection of these synchronous verticals can be accomplished without major disassembly. Angular contact, spherical roller and Kingsbury thrust bearings are available. Lower guide bearings are furnished split type as standard and can be replaced without dismantling the motor.

For additional information, write THE IDEAL ELECTRIC AND MANUFACTURING CO., 333 E. FIRST ST., MANSFIELD 15, OHIO, or use the Post Card on Page 56. Circle No. 931.

Executive Changes at Dorr-Oliver

Lloyd R. Boling, whose election as executive vice president of Dorr-Oliver Incorporated, Stamford, Conn., was recently announced by company President J. D. Hitch, Jr., will be responsible for administration of the operating affairs of both the parent company and subsidiaries. Mr. Hitch will now devote his efforts to corporate policies, long-range planning and other areas involving broad corporate relationships.

Vice President T. Bartow Ford has been given overall responsibility for activities involving design, engineering and sale of complete plants, including FluoSolids installations. To fill the vacancy created by Mr. Ford's change of responsibility, Glen G. Reed, former general manager, was elected vice president for sales.



Methods of excitation that can be provided for Ideal vertical synchronous motors include direct-connected exciters, motor generator sets and excitation for the plant DC power supply.

Plastic Diatomite Vacuum Filter for Water Filtration

The rectangular filter, Model VFL, uses flat, leaf-type filter elements and top take off. It is made entirely of corrosion-resistant fibreglas reinforced plastic, including filter shell, inner leaf-type elements and baffles.

According to the manufacturer, which has designed it for filtration of municipal potable water supplies, larger swimming pools and industrial process water, it offers the advantages of diatomite filtration plus lower operating costs, easier cleaning, and the elimination of rust and corrosion, special liners and annual paint maintenance. Open tank construction enables inspection without disassembly.

For municipal applications for the filtration of potable water, sizes range from 216 to 648 square feet filtering area; for large swimming pools, from 240 to 720 square feet filtering area. Additional information can be obtained from B-I-F INDUSTRIES, INC., 345 HARRIS AVE., PROVIDENCE, R. I., or by using the Post Card on Page 56. Circle No. 938.

This plastic diatomite filter has a capacity of 432 square feet. It lends itself to rapid build-up of filter aid and easier sluicing when washing.

Propane-Fired Roller

Ellis Manufacturing Company reports that under testing laboratory conditions its new 1-ton asphalt roller developed more compaction than an ordinary 5-ton tandem roller. Application of heat, supplied to burners within each roller through a propane fuel tank, is said to enable the smaller roller to achieve compaction greater than the heavier machine.

The front roller of the Ellis unit is 18 inches; the rear, 21 inches in diameter. Steering is achieved through a worm gear. A 7-hp air-cooled Wisconsin engine powers the unit through a chain drive to the rear roller. The machine operates forward and reverse with engine ratio of 50:1. Brakes are not required. For additional information, write ELLIS MANUFACTURING CO., LIBERTY, MO., or use the Post Card on Page 56. Circle No. 946.

Reports indicate that mix temperatures would not be as critical using the heated Ellis 1-ton roller as with a regular tandem.

Shower Demonstrator

This is a demonstrator model of a 175-pound multiperson shower column for school and recreation facility use. Although as much as possible of the 6-foot high, 10-inch diameter steel column has been eliminated, it contains the five latest design shower heads and soap tray,

FRANKLIN FABRICS UNIFORMS

373

Range 373 has symbolized the top quality Police and Fire Department Uniform Fabrics for over 25 years.

It is made in all weights for all climates.

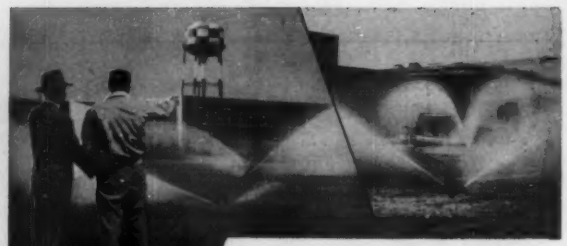
Stock dyed
2 ply
Fast Colors
Uniformity of Shade

Corresponding qualities in worsted whipcords and elastiques; gabardines and tropicals in either 100% worsted or worsted/dacron blends.

TO BE SURE, SPECIFY

FRANKLIN WORSTEDS

for additional information write to—
David E. Singer, Sales Agent
FRANKLIN WORSTED COMPANY
40 East 34th St., New York 16, N. Y.



NEW BUCKNER EXCLUSIVES

Adjustable GEAR DRIVEN ROTARY POP-UP SPRINKLERS

One Piece QUICK COUPLING VALVES

BUCKNER SPRINKLERS ARE YOUR BEST BUY

Buckner's research and engineering have developed new sprinklers and valves to deliver best effective water coverage pattern. Insist on genuine factory-tested Buckner irrigation equipment for extra years of service.

BUCKNER DEALERS SERVE YOU BETTER

You get technical irrigation planning assistance plus complete drawing board layouts for any sprinkler system. In many cases layouts are furnished free. Look in the yellow pages for your local Buckner dealer.

BUCKNER MANUFACTURING CO., INC.
P. O. Box 232 Fresno, California

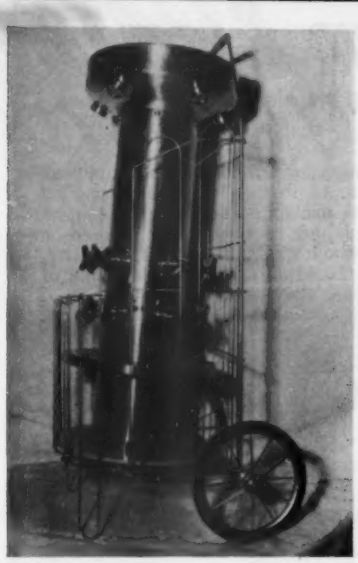
Pick the right paint for the job

FREE PAINT INDEX

Whatever your painting problem, there's *one* paint especially formulated to give the *most effective* protection. With this handy guide, choosing that paint is simple and easy. Profitable, too, because the correct choice will wear longer, save you money on costly repaints. Write for your free money-saving Paint Index today!

Heavy-Duty Maintenance Paints Since 1883

TROPICAL PAINT COMPANY
1112-1252 W. 70th, Cleveland 2, Ohio
PARKER RUST PROOF PRODUCTS



the five sets of water control valves and drain as furnished on the standard showers. For complete information, write BRADLEY WASHFOUNTAIN CO., 2333 W. MICHIGAN ST., MILWAUKEE 1, WIS., or use the Post Card on Page 56. Circle No. 939.

Drums into Waste Receptacles

"Magic Lid" converts 16-gallon lube drums into sanitary waste receptacles without the use of bolts, screws or other adapter devices. The lid automatically locks over the drum rim when its long, arc-shaped handle is raised. A convenient center hole simplifies waste disposal.

Magic Lid comes in a baked enamel finish. United spray-on paint can be utilized in conjunction with the new lid in making match-mates of lid and drum. For complete details, write UNITED METAL CABINET CORP., 8 E. 36TH ST., NEW YORK, N. Y., or use the Post Card on Page 56. Circle No. 914.

Hawaii Gets Playground Equipment

Stainless steel slides, climbers, swings and merry-go-rounds comprised the first full carload of playground equipment shipped to Hawaii recently by Game-time, Inc., Litchfield, Mich.

One of the nation's oldest manufacturers of park and playground equipment, Game-time now offers a whole circus of appealing, durable, functional animals of molded fiberglas, painted equipment of all kinds, a complete line of climbers and hobby-horse swings, as well as "Saddle-Mates" and the Teeter Whirl.

In the immediate offing is a new and more economical slide for park and school.

Personnel behind this aggressive company include Vic Brown, president and general manager, L. W. Kaul, his special assistant and executive vice president of the parent company, Simpson Mfg. Co.; O. L. Allread, manufacturing activities head; and W. E. "Bill" Garrett, director of sales, playground and

Tex-Vit Expands Facilities

Production of a new line of sewage lift stations that includes pneumatic ejectors, packaged dry pit pump stations, packaged dry pit pump stations and packaged ejector stations is now under way at the new Weatherford, Texas plant of the Tex-Vit Supply Company, Mineral Wells, Texas.

According to J. F. Bailey, company president, the new plant is to handle all assembly and finishing operations, as well as final inspection, testing and shipping.

Tex-Vit markets materials and equipment for water and sewage construction, and is a major outlet for a number of related products sold principally to the municipal field. The new plant is approximately 30 miles west of Fort Worth.

This interior view of a Tex-Vit underground dry pit sewage pumping station shows the duplex flexible-coupled pump assembly, centralized electrical control box and dehumidifier unit. The packaged assembly is fully enclosed in a cylindrical steel tank which is welded to the base mounting plate.

Radio-Operated Traffic Signals

A completely transistorized intersection receiver-decoder receives and decodes tone signals from an automatically programmed radio base station. Signal voltages are fed into the standard traffic signal controller at the intersection, providing offset synchronization and time cycle changes to coordinate traffic flow.

The new unit, which contains a radio receiver, power supply, relays and tone determining elements is capable of providing supervision of any three of 17 different time cycles at an intersection.

The transistorized receiver requires minimum maintenance. All tone relays, filters and other components are covered, sealed, plug-in devices that are easily replaced and interchanged. This design not only speeds maintenance, but also facilitates system expansion and changes.

To allow easy removal, the complete receiver, power supply and decoder chassis are each attached to a single aluminum plate by quarter turn fasteners and electrical plug-in connectors. The

Transistorized intersection receiver-decoder unit for Motorola's radio traffic control systems.

HAVE YOU REACHED YOUR LIMIT ON CHEAP, FLIMSEY SIGNS?...

If you are tired of replacing your traffic-control signs year after year – then it's time to install long-life Miro-Flex signs. These quality signs are embossed on zinc-coated, Bonderized steel, and finished in high-grade, baked-on enamel. Embossing gives them greater strength, rigidity, and legibility than flat-surfaced signs. A complete line of uniform traffic-control signs, street-name assemblies, and custom-designed signs are available. Write for your free catalog and name of nearest source.

Embossed MIRO-FLEX SIGNS LAST and LAST...

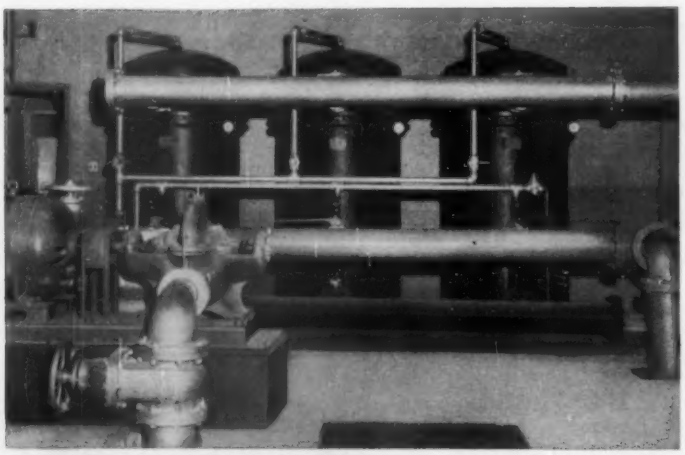
THE **MIRO-FLEX** CO., INC.

1824 EAST SECOND WICHITA 7, KANSAS

Standard Traffic Signs Available for Immediate Delivery at Northeastern Warehouse

■ Koontz Equipment Corporation, 325 Ohio River Blvd., Emsworth, Pittsburgh 2, Pennsylvania ■

ADAMS DIATOMITE FILTERS ARE BEST...



Shown above is a typical Adams filter installation handling the entire water supply of a small eastern community. The three units are capable of handling more than 1500 gpm. with plenty of spare capacity for peak periods.

for Small Community Water Systems

Maximum filter efficiency and capacity, coupled with minimum space requirements, enable the Adams line of diatomaceous earth filters to more effectively solve small community water filtration problems. Diatomite filtration assures you a water supply of sparkling clarity... the year 'round.

Exclusive Adams Hydro-Pneumatic backwashing simplifies operation — for more complete and rapid backwash and reduced labor requirements. The Adams filter systems are compact — do not require extensive ground area, elaborate foundations and other expensive construction features.

Why not investigate how an Adams system can improve your water supply. Write today—

R. P. ADAMS CO., Inc. • 202 East Park Drive, Buffalo 17, N. Y.

aluminum plate itself can also be easily disconnected from the unit's housing.

More than 150 of these new units are being installed in the Washington, D. C. radio control system. Others will be used in the New York City and Wayne County, Michigan systems, also being supplied by MOTOROLA, INC., 4501 W. AUGUSTA BLVD., CHICAGO 51, ILL. For additional information write the company, or use the Post Card on Page 56. Circle No. 921.

Aerosol Spray Doubles as Steam Cleaner

The new, low-priced model of the Bes-Kil aerosol insect sprayer is skid-mounted and without a tank, but otherwise is identical to the more familiar trailer - mounted models.

The Bes-Kil is an adaptation of the smoke screen machine used by the United States Navy during the second world war and applies insecticide outside of the machine so that the chemical does not lose potency by being overheated. It may also be used as a wet-spray machine, with a spray boom or by hand, and is said to be an excellent steam cleaner for heavy machinery.

It is reported that in aerosol application, university tests have shown it to be the most effective machine tested for killing flies, mosquitoes and other insects. For full facts, write BESLER CORP., 4053 HARLAN ST., EMERYVILLE, OAKLAND 8, CALIF., or use the Post Card on Page 56. Circle No. 934.

3/8-Yard Backhoe Improved

Two new undercarriages for the 3/8-yard Model 200 Hopto backhoe have been announced.

The first, a self-propelled rubber mount, features a 16-foot turning radius for maneuverability in tight places, 25-mph mobility, individually controlled hydraulic out-riggers and a swivel seat to face the controls of either the carrier or the boom. The Hopto backhoe equipped on this undercarriage mount is now designated as Model SPR.

The second is a crawler mount, identified as the Model 200 SPC. It features a heavy-duty frame, new counterbalanced design for stability, cast manganese steel idler sprockets, and a speed of 2 mph.

The crawler is designed for off the road operations on either rough or soft ground. Tracks are 17" wide and 9'6" long, giving the unit a bearing of 4.5 psi. It has power brakes and chain drive. The power unit is a 6-cylinder engine rated at 54-hp at 1800 rpm. It supplies power for both the crawler and the backhoe.

For additional information, write the BADGER DIVISION, THE WARNER & SWASEY CO., 1112 W. FIFTH ST., WINONA, MINN., or use the Post Card on Page 56. Circle No. 912.

The two improved models of Warner & Swasey's 3/8-yard Model 200 Hopto. Self-propelled rubber mount (above) is designated as Model SPR; the crawler mounted unit, as Model 200 SPC.

Grounds Groomer Gathers Litter

Capable of operating at speeds up to 12 mph, the Grounds Groomer gathers litter of practically every description.

Wet leaves, dry leaves, grass cuttings, scrap paper, sticks, stones, and bottles are picked up without damage to turf or equipment by the Grounds Groomer, a new one-man operated power sweeper.

Designed for use on parks, cemeteries, golf courses, athletic fields, parking lots, picnic grounds, and school campuses, the Grounds Groomer operates at speeds up to 12 mph, depending upon terrain and condition or litter It's power-driven pick-up brush, 5 feet wide and 14 inches in diameter, has fingers made of durable belting material. Its quick-dump body has a capacity of seven cubic yards.

For additional information, write RONNING CORPORATION, 951 CENTRAL AVE., MINNEAPOLIS 13, MINN., or use the Post Card on Page 56. Circle No. 932.

Big Signs for Fast Traffic

Large lettered overhead signs have become standard practice on many expressways and turnpikes. On an 8-mile extension of the New Jersey Turnpike, between the Turnpike and the Holland Tunnel to Manhattan, are three exits and seven choices of direction. They are marked by overhead internally illuminated acrylic plastic signs.

These Plexiglas signs range in dimensions from 6 to 11 feet in height and 11 to 46 feet in width. Capital letters average 16 inches; lower case, 12 inches. Readability is said to be 65 feet per inch of letter height.

Some variations of the overhead sign have been erected or specified on the Interstate Road System in several states. The Plexiglas colors, samples available, developed to match the Interstate standards are

EXTRA FUN FOR YOUR PATRONS . . .
EXTRA REVENUE FOR YOUR PARK

A FEW OF THE MANY G-16 MINIATURE TRAINS IN CITY PARKS

CLEVELAND ZOO, Cleveland, Ohio
GRIFFITH PARK, Los Angeles, California
CITY PARK, New Orleans, Louisiana
LINCOLN PARK, Chicago, Illinois
PULLEN PARK, Raleigh, North Carolina
COLUMBUS ZOO, Columbus, Ohio
AUDUBON ZOO, New Orleans, Louisiana
HOGLE ZOOLOGICAL GARDENS, Salt Lake City, Utah
MILL MOUNTAIN PARK, Roanoke, Virginia
CHILHOWEE PARK, Knoxville, Tennessee
SWOPE PARK, Kansas City, Missouri
WOODLAND PARK, Seattle, Washington
FOREST PARK, Fort Worth, Texas
JACKSONVILLE ZOO, Jacksonville, Florida
BRACKENRIDGE PARK, San Antonio, Texas
RIVERVIEW ZOO, Omaha, Nebraska
HERMAN PARK, Houston, Texas
LANE PARK ZOO, Birmingham, Alabama
COMO PARK, St. Paul, Minnesota
HIGHLAND PARK, Pittsburgh, Pennsylvania
TROSPER PARK, Oklahoma City, Oklahoma
ENCANTO PARK, Phoenix, Arizona

A FEW OF THE MANY MERRY-GO-ROUNDS IN CITY PARKS

SWOPE PARK, Kansas City, Missouri
CLINCH PARK AND ZOO, Traverse City, Michigan
McCULLOUGH PARK, Muncie, Indiana
OLD FAIR PARK, Kankakee, Illinois
NAY AUG PARK, Scranton, Pennsylvania
CITY PARK, Jackson, Mississippi
JOHNSTON PARK, Bartlesville, Oklahoma
VIRGINIA BEACH, Miami, Florida
CASCADE PARK, New Castle, Pennsylvania
CHILHOWEE PARK, Knoxville, Tennessee
CLEVELAND ZOO, Cleveland, Ohio
LINCOLN PARK, Chicago, Illinois
RIVERSIDE PARK, Independence, Kansas
KERN RIVER PARK, Bakersfield, California

Give your park a lift with an MT Miniature Train and an Allan Herschell Merry-Go-Round. They will add to your park's recreational facilities, increase its popularity and bring in extra revenue. Both are built for eye-appeal and long, dependable service.

Write our Park Department for complete catalog describing these and other AH rides.

Allan Herschell Co., Inc.
and
Miniature Train Co., (Div.)
North Tonawanda, N. Y.
Phone: LUdlow 4300

New York's Successful "CHAIN GRATE" Incinerator

The above Incinerator was installed in New York City's Gansevoort Refuse Displosal Plant.

Why has our Design proven Best by Test?:

- Cast steel grate surface—non-breakable, trouble-free operation.
- More tuyere sections for better distribution of air.
- Front take-up is easily accessible to operator.
- Patented cast steel links, over-lapping to prevent fouling.
- Continuous discharge of refuse from grate surface.
- Applicable to largest incinerators up to 24-feet wide.
- Minimum labor and maintenance required for operation.
- No heavy stoking or cleaning of fires . . . ease of operation.

ILLINOIS STOKER COMPANY
ALTON, ILLINOIS

Good Roads "Jet" Spreaders

A SIZE AND STYLE FOR EVERY NEED! Ideal for salt, cinders, sand or gravel, cab operated "Jet" Spreaders provide the speed and capacity essential for fast efficient ice control on streets and highways.

Available in engine-driven, hydraulic and direct power take-off models. Width and depth of spread, and spread pattern are easily varied to meet any requirement. Standard models feature 5½ and 6 cubic yard hopper capacities . . . larger sizes are also available.

For complete information, see your Good Roads distributor or write:

GOOD ROADS MACHINERY Corp.
MINERVA, OHIO

green, red, white, blue and yellow. Samples of these colors have been submitted to the National Joint Committee on Uniform Traffic Control Devices and to the Bureau of Public Roads, Washington 25, D. C. There are sign manufacturers who specialize in the construction of this type sign. Their names can be obtained from ROHM & HAAS CO., PLASTICS DEPARTMENT, WASHINGTON SQUARE, PHILADELPHIA 5, PA., or by using the Post Card on Page 56. Circle No. 930.

The Type PA-30 school traffic signal system, designed for operation at mid-block crossings.

Signal System for School Crossings

Because mid-block crossings are safer places for children (they do not have to avoid turning traffic), Crouse-Hinds has designed its new school traffic signal system for these locations.

The Type PA-30 signal, as it has been designated, operates automatically in response to push buttons during the morning and afternoon. At other periods during the day, and on non-school days, it remains or normal "Go" indication.

An electronic controller provides simple timing adjustments. Control knobs are easily turned to desired settings; no changing of gears or setting of dial keys is required. For complete information, write CROUSE-HINDS CO., SYRACUSE 1, N. Y., or use the Post Card on Page 56. Circle No. 924.

Power Curbers Takes Over E. L. Hardin

The Salisbury, N. C. firm of Power Curbers, Inc., which is headed by John S. Henderson, president and treasurer, has taken over E. L. Hardin Associates, Inc., manufacturers of Stephens-Canfield curbers and Smith-Field automatic curb and gutter machines.

Power Curbers will continue to manufacture the machines at the present locations, and has appointed Roy Smith vice president and assistant treasurer of the company. Mr. Smith is the inventor of the Smith-Field unit and will be in charge of the company's research department.

Merger Announced

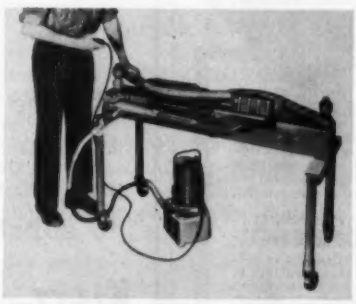
On August 3 Hetherington & Berner Inc. became a wholly-owned subsidiary of the American Hoist & Derrick Co. of St. Paul, Minn. Under the new ownership it hopes to attain a stronger position in the industry, and plans to continue its merchandising and manufacturing efforts much the same as before.

Hydraulic Pipe and Conduit Bender

Of entirely new design, this multipurpose hydraulic pipe and conduit bender quickly makes accurate offsets and full 90° bends close to the end of ½" to 2½" pipe or conduit with only one setting and one ram stroke.

This versatile unit, which can also make bends of any degree between 90° and 180° can be used at the job site or in the shop. It develops 15 tons of ram pressure and can be hand- or power-pump operated.

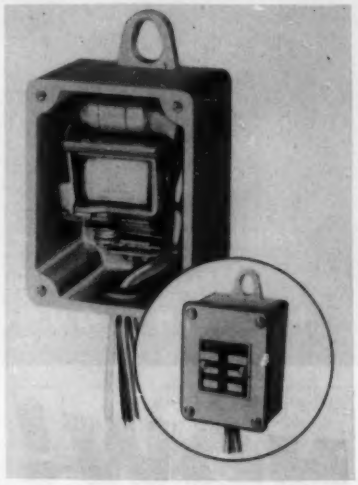
Delivered with heavy-duty casters mounted on the base, the bender can be operated at floor level, or it may be set up at a table of any height simply by inserting lengths of standard pipe in the base as legs and screwing casters on the legs.



This one-man operated Greenlee pipe and conduit bender makes perfectly aligned clean offsets and bends up to 180°.

Complete specifications are given in *Bulletin* E-234, which can be obtained from GREENLEE TOOL CO ROCKFORD, ILL., or by using the Post Card on Page 55. Circle No. 937.

Multiple Relay Has Lightning Arrester, Time-Proven Contactor



The compact Fisher-Pierce Type 250A multiple relay is housed in a weatherproof cast aluminum enclosure with gasketed cover. It measures 3½" x 2¾" x 2⅛". It is shown here with cover open and cover closed (inset).

The new Fisher-Pierce Type 250A Multiple Relay, complete with lightning protection, is designed for pilot wire control, cascading street lighting circuits and industrial applications. It can multiply load handling capability of a single photoelectric control and, when used in this way provides a simple and inexpensive method of controlling multi-lamp installations.

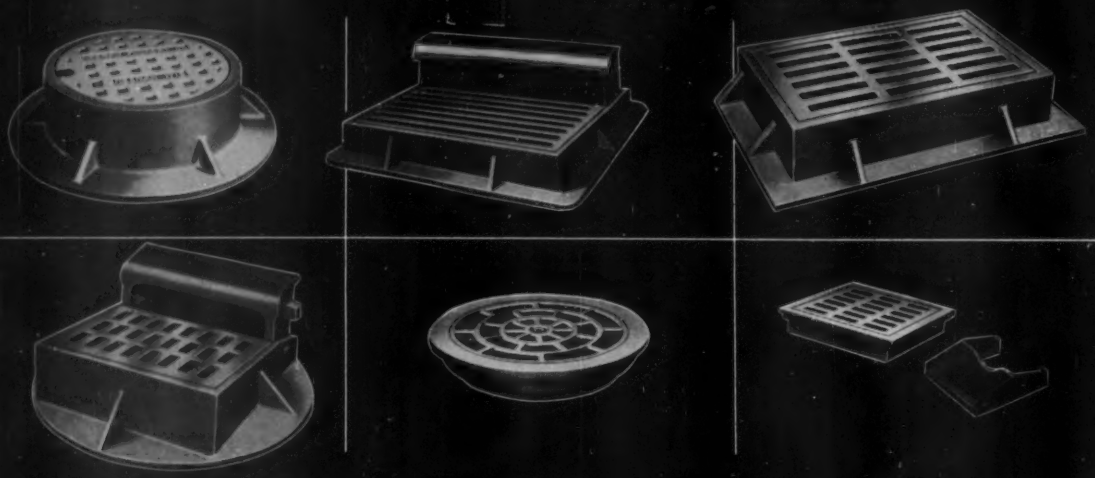
A built-in Joslyn expulsion-type lightning arrestor provides positive protection of the contactor. The electromagnetic load contactor is rated 30 amperes with a 300-ampere maximum inrush current rating. The relay operates on 105-130 volts 50/60 cycle AC and has a 2500 volt hi-pot rating.

Two models of the Type 250A Multiple Relay are available: Model 251A with normally-open contacts; Model 252A with normally-closed

SOUND QUALITY • SUPERIOR FINISH • SOLID VALUE

CONSTRUCTION CASTINGS

DELIVERED ON TIME!



Patterns on hand for over 15,000 different Gray Iron and Ductile Iron construction castings.

Write for our new 165-page completely illustrated catalog.

NEENAH FOUNDRY COMPANY • Neenah, Wisconsin

Chicago office: 5445 North Neva Avenue, Chicago 31, Illinois

NOW!

a NEW solid-color PVC

POLY-CONE*

tough, durable, no seams, will not CRACK, TEAR or BREAK!

This new SAFE-T-CONE never needs repainting. Just wash it with soap or solvents. Made of polyvinyl-chloride to produce the toughest, *most durable cone on the market.* Outlasts ordinary cone many times . . . . without upkeep!

**Polyvinyl-chloride*

2191

SAFE-T-CONE®

TRAFFIC GUIDES

All-Rubber SAFE-T-CONES available in 3 SIZES!

Painted or Reflectorized ALL RUBBER

Regular all-rubber SAFE-T-CONES, now better than ever. Painted standard red and yellow or reflectorized.

Plastic or All-Rubber FLUORESCENT

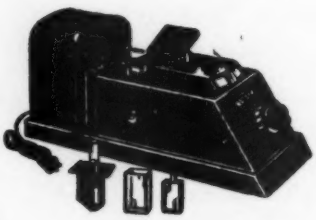
New Poly-Cones and All-Rubber cones available in brilliant orange-red fluorescent for extra brilliance, day or night.

SAFE-T-CONES made only by **Radiator Specialty Co.**

Charlotte, N. C.

KLETT SUMMERSON ELECTRIC PHOTOMETER

Adaptable for Use in Water Analysis



Can be used for any determination in which color or turbidity can be developed in proportion to substance to be determined.

KLETT MANUFACTURING CO.

179 East 87th Street New York, N. Y.

contacts (coil de-energized). Both have single-pole, single-throw, double break contacts.

For additional information, write THE FISHER-PIERCE CO., 50 PEARL ST., S. BRAINTREE 85, MASS., or use the Post Card on Page 56. Circle No. 913.

New Remote Reading Water Meter System

A new remote-reading register system called Teleread was unveiled by Buffalo Meter Co., Inc., Buffalo, N. Y., at the annual conference of the American Water Works Association held recently in San Francisco.

The Teleread Remote Meter reading system has the customary round register mounted on the meter body. However, potentiometers have been placed on the shafts that serve the hands indicating 1,000 gallons or higher. These connect through wires to a shielded plug mounted on the outside of the house. In the present design, the plug can be as much as 300 feet from the meter.

The meter reader carries a small Readout reading mechanism mounted in a case which is about the size of a flashlight but lighter in weight. The mechanism has three battery-operated dials. When the reader places the readout in the plug, he provides power to the line that in turn transfers the reading from the meter to the Readout scales.

The system has these advantages:

- **it eliminates the need for a meter reader to enter the building;**
- **it does not place any mechanical load on the mechanism in the meter;**
- **it permits placing the meter wherever convenient on the water line;**
- **only one readout tool is needed for each meter reader. The transducer incorporated in each meter does not have to develop any power and is electrically "dead" except while the reading is actually being taken. It is therefore inexpensive.**

Manufacturing plans are now being developed actively but no marketing date has yet been set and no definite price fixed. For additional information, write BUFFALO METER CO,. 2902 MAIN ST., BUFFALO 14, N. Y., or use the Post Card on Page 55. Circle No. 943.

New Photocopier for Clean Fingers

A new automatic single-unit photocopier provides the advantages of a true photographic process, yet is so designed that the fingers of the operator need never touch fluid. This is the result of the company's unique "Seal-Pak" system, which employs convenient disposable sealed vinyl bags to contain the processing fluid. The "Seal-Pak" system eliminates handling and mixing, and prevents spilling of processing fluid. Life of the solution is also prolonged.

The Contouramatic MARK II reproduces any mark made by black or colored pencils, pens, stencils, rubber stamps, spirit duplicators, chalk, crayons or grease pencils, as well as typing and fine printing. The photocopier makes black and white copies up to 9-inches wide on card stock.

For all the details write F. G. LUDWIG, INC., 151 COULTER PLACE, OLD SAYBROOK, CONN., or use the Post Card on Page 56. Circle No. 929.

New photocopier with sealed vinyl bag containing ink at left.

Buys Ram Equipment

L. Lindquist *R. L. Kennedy*

Leroy Lindquist, president of Tel-E-Lect Products, Inc. of Minneapolis, Minn., a prime supplier of pole line construction and maintenance equipment for public utilities, has announced his company's purchase of Ram Equipment Company of Minneapolis.

According to Ray L. Kennedy, Tel-E-Lect vice president, this will enable Tel-E-Lect to expand its sales into areas of city, county and state street and highway maintenance. Equipment manufactured under the Ram name includes a rotary snow plow and loader, leaf loader, street sweeper, bituminous surfacing spreader and scrap metal handling device for front-end tractor mounting.

E. T. (Mike) Michaelson is sales manager of the Ram Division.

Clow Granted Patent

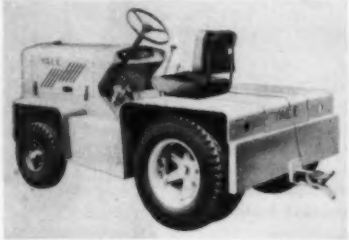
James B. Clow & Sons, Inc., Chicago 80, Ill., manufacturer of cast iron pipe, and water works materials has been granted Patent No. 2,898,131 on the Clow Bell-Tite Cast Iron Pipe Joint, by the U. S. Patent Office.

The Bell-Tite Joint is a single rubber gasket, slip-on type joint that makes pipe laying faster and more economical than the Mechanical Joint or Bell and Spigot Joint.

Yale Enters New Field

Development of a compact, very heavy-duty pneumatic tire gas or LP-Gas powered industrial tractor in 3000-, 4000- and 5000-pound draw bar pull capacity has been announced by Yale Materials Handling Division, The Yale & Towne Manufacturing Co.

Measuring just 102½" in overall length and having turning radii of



An engine hour meter is a standard feature on Yale & Towne's new straight-line frame tractor line, which is ruggedly designed for heavy-duty application.

"Hardrock Smitty" says:

THE SMITH 125 AIR COMPRESSOR CAN'T BE BEAT FOR RUGGED DEPENDABILITY.

Built to stand up under all conditions, the Smith 125 Compressor costs less to buy and less to operate. Easy maintenance, simple compact design means more air for less money. 95% of all moving parts are available from the nearest industrial engine dealer. Besides the 125 there are 45 cfm and 75 cfm models both portable and stationary.

Write us for complete information and the name of your nearest dealer.

Ask your dealer for an "on the job" demonstration.

SMITH
AIR COMPRESSORS

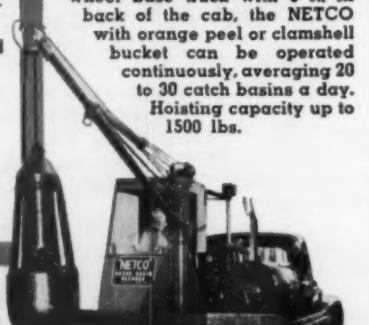
GORDON SMITH & COMPANY, INC., 425 College St., Bowling Green, Ky.

NETCO CATCH BASIN CLEANER

Is Serving Many States, Cities and Turnpikes Throughout This Broad Land

- Penn. Turnpike Comm.
- East Cleveland, Ohio
- Cumberland, Maryland
- Indianapolis, Ind.
- Lansing, Michigan
- Jersey City, N. J.
- Worcester, Mass.
- New York, N. Y.
- Boston, Mass.
- Chicago, Ill.

Easily mounted on any short wheel base truck with 8 ft. in back of the cab, the NETCO with orange peel or clamshell bucket can be operated continuously, averaging 20 to 30 catch basins a day. Hoisting capacity up to 1500 lbs.

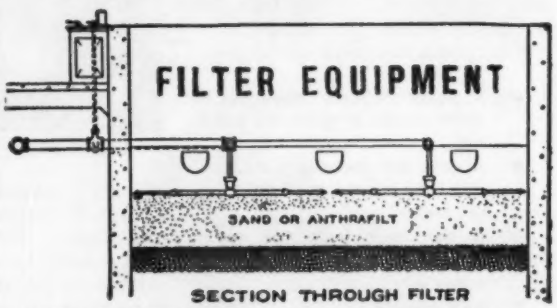


NETCO does almost three times as many basins a day at less than half the cost per basin compared with old-fashioned manual methods.

Send for our 6-page descriptive folder

NETCO DIVISION
CLARK-WILCOX COMPANY
118 Western Avenue
Boston 34, Massachusetts

PALMER



SECTION THROUGH FILTER

Filter Bed Agitator Advantages

Requires an average of 40% less wash water

Eliminates mud balls

Prevents cracking and shrinkin of the beds

Produces "new" sand after sho period of normal operation

Enables you to increase filter runs up to 50%

Anthrafilt Advantages

Doubles the length of filter runs attainable with sand and quartz media

Requires one-half as much wash water

Filters are out of service less because of the shorter wash cycle

Coating, caking or balling with mud, lime, iron or manganese reduced to the minimum

Write for Circular

PALMER FILTER EQUIPMENT CO.

P. O. BOX 1655, ERIE, PA.

122", these tractors boast normal travel speeds of 13.6 miles per hour forward and 1.8 mph in reverse. They are powered by a 6-cylinder, 72-hp Chrysler industrial engine and have four forward speed, one-reverse syncromesh transmission. Both engine and transmission are set in six rubber mounts.

Straight-line frame construction of heavy steel members produces a ruggedness of design to withstand heavy-duty application and makes possible more room in the engine compartment to facilitate maintenance operations. An Orshlon brake handle in the roomy operator's compartment provides a short, small emergency brake lever which requires a minimum of floor board space. For additional information, write YALE MATERIALS HANDLING DIVISION, THE YALE & TOWNE MANUFACTURING CO., 11000 ROOSEVELT BLVD., PHILADELPHIA 15, PA., or use the Post Card on Page 56. Circle No. 944.

Manhole Meter Easy to Install

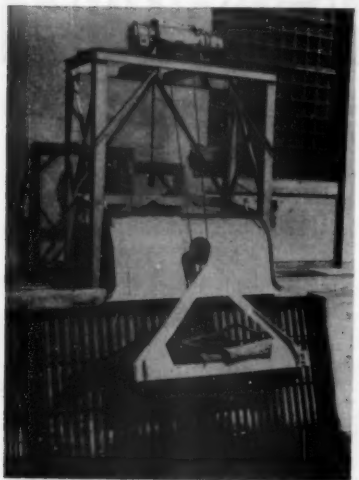
The unusual design of Saddle Meter, Type 906, permits it to be installed quickly and easily on steel cylinder or reinforced concrete pipe in sizes from 16" to 72". (Fabricated steel saddle and mounting skirt may be furnished to customer specification for mounting at the time pipe is being manufactured.)

Sparling Saddle Meter, Type 906.

The meter assembly slides directly through the opening of the pipe's standard flanged section or manhole opening and bolts easily into position ready for immediate service. The meter is the propeller type and may be installed at any convenient angle in a full flowing suction or discharge line. Total flow is registered on a 6-digit straight reading totalizer, reading in standard units. Accuracy is within 2% over the manufacturer's specified range.

Type 906 comes complete with saddle, gaskets, bolts and straightening vanes; or meterhead only with gasket and bolts. For complete data, write SPARLING METER CO., 225 N. TEMPLE CITY BLVD., EL MONTE, CALIF., or use the Post Card on Page 55. Circle No. 935.

Clears Clogged Water Intakes



The Leonard trash rake operates directly on rack bars; channel guides are not needed.

The Leonard trash rake removes leaves, grass, roots, branches and other debris from trash racks that protect water intakes at power, sewerage and water supply plants. It can be used on stationary intake rack structures which have either inclined or vertical rack bars.

An electric hoist raises and lowers the rake. When descending, the rake's teeth turn upward parallel with the rack bars to clear debris. When ascending, the teeth tilt to a position perpendicular to the racks and penetrate between them to carry debris to the unloading position. Removal of floating trash is speeded as the rake teeth rotate to the proper raking position without approaching either extreme of rake travel.

An outstanding characteristic of the Leonard trash rake is said to be its ability to ride down over stubborn obstructions and work them free. Cleaning of bars is reported to be easy because guides at the rack bars are not needed. For additional information, write ALLIS-CHALMERS MFG. CO., INDUSTRIES GROUP, MILWAUKEE 1, WIS., or use the Post Card on Page 56. Circle No. 949.

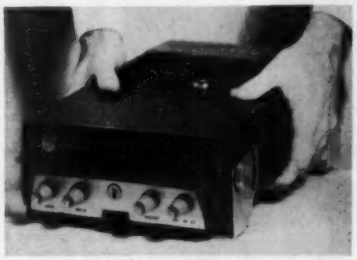
Battery Drain Negligible with This Transistorized Two-Way Radio

A line of transistorized two-way radio equipment will be available in units up to 75 watts, and downward to 30 and 10 watt units in sizes as small as 8⅝ inches wide, 12 inches long and 4 inches high.

The General Electric Co. will manufacture Transistorized Progress Line at its Lynchburg, Virginia plant. In field tests, the new units were left installed in passenger cars running continuously in winter and summer weather under normal operating conditions without the battery requiring attention, due to low current drain.

When on "standby" (full sensitivity, ready to respond instantly to a call with full volume output), General Electric's new 75-watt unit uses a negligible 0.040 amp. This is so low, the company points out, that a driver can leave his radio in the standby position continuously and the drain on the car's battery would be like the drain of the vehicle's clock.

For further information, write Section P, GENERAL ELECTRIC COMMUNICATION PRODUCTS DEPARTMENT, P. O. Box 4197, LYNCHBURG, VA.. or use the Post Card on Page 56. Circle No. 936.



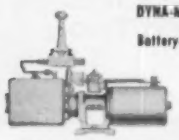
Compact transistorized two-way radio equipment can be mounted completely under the dashboard of police cars and other municipal vehicles, or may be split for mounting in the trunk or elsewhere. When split, front section of unit becomes control head.

fast, dependable snow plow action

with MONARCH POWER

HYDRAULIC CONTROLS

Lift and lower the snow plow right from the cab . . . automatically . . . with Monarch Power Hydraulic Controls. Snow removal is easier, faster, more economical with Monarch. Instant up-and-down action with the flick of a wrist. See your dealer or write for illustrated folder.



DYNA-MIGHT
Battery-Operated

HY-LO-JACK HY-LO-JEEP
Fan-Belt Driven

MONARCH ROAD MACHINERY COMPANY
1331 Michigan St., N. E. — Grand Rapids 3, Michigan

No other filtering medium compares with

ANTHRAFILT
Trade Mark Reg. U. S. Pat. Off.

Anthrafilt stands alone as the one Filtering Medium that is *best* for all types of filters.

Years of efficient and economical use in every type of filter plant has made ANTHRAFILT the standard of excellence in the filtering medium field.

ANTHRAFILT

offers important advantages over sand and quartz

DOUBLES length of Filter runs. • REQUIRES only half as much wash water. • KEEPS Filters in service over longer periods. • INCREASES Filter output with better quality effluent. • GIVES better support to synthetic resins. • PROVIDES better removal of fibrous materials, bacteria, micro-organic matter, taste, odor, etc. • IDEAL for industrial acid and alkaline solutions. • EFFECTIVE filtration from entire bed. • LESS coating, caking or balling with mud, lime, iron, or manganese.

IDEAL FOR USE IN EVERY TYPE OF FILTER

Write for further information, test samples and quotations to:

PALMER FILTER EQUIPMENT CO.
P.O. Box 1696 — 822 E. 8th St., Erie, Pa.
Representing:
ANTHRACITE EQUIPMENT CORP.
Anthracite Institute Bldg., Wilkes-Barre, Pa.

stop "Litterbugs" fast!

INSTALL MODERN *San-Equip* WASTE RECEPTACLES

Here is a completely new design in waste receptacles. For use in any location, particularly where appearance is important. The San-Equip Waste Receptacle offers these outstanding features:

- Easy to install—securely fastened to pole or wall
- Free from vandalism
- Hand-high to encourage use
- No handling to empty—saves time
- No damage through handling —low maintenance cost
- Weather-tight container protects waste
- Moderate in cost

Easy to empty

Send This Coupon Today!

VEGA INDUSTRIES, INC.
6119 E. Brighton Avenue
Syracuse 5, New York

Please send detailed information on the new San-Equip Waste Receptacle.

NAME .....
ADDRESS .....
CITY ..... STATE .....

The "Pick" of
MINNEAPOLIS

THE Pick-Nicollet

600 Rooms with bath from $5.50

NO CHARGE FOR CHILDREN
FREE RADIO AND TV
AIR-CONDITIONED ROOMS

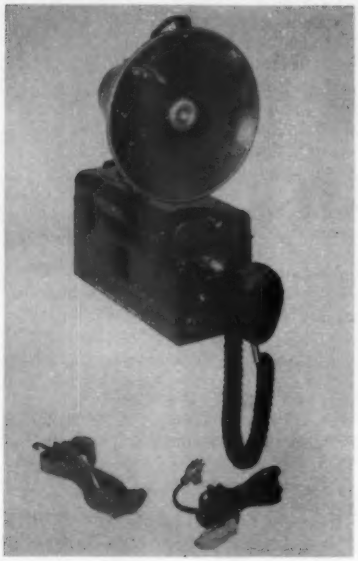
Delicious Cuisine and Beverages

- WAIKIKI ROOM
- JOLLY MILLER
- COFFEE SHOP

ALWAYS THE BEST FOR EVERY GUEST
ALBERT Pick HOTELS

FEderal 3-3177
Thomas P. Ryan, mgr.

Transistorized Paging Unit



Power output of this transistorized portable paging unit is 5 watts at normal level, 10 watts at peak.

Developed by Raven Electronics Manufacturing Co., Chicago, Ill., for on-the-go paging and general public address use, Transi-Page is especially suited for out-door use.

It is equipped with a combination adjustable power output and volume control which reportedly restricts distortion to less than 5% at peak level. A new transistorized circuit design permits minute drain on batteries, and also provides greater compactness, plus service-free operation.

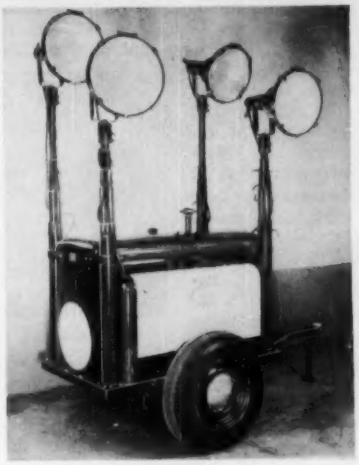
Transi-Page is supplied with a heavy-duty plug-in dynamic microphone, 6-foot cord, 8-inch trumpet-type speaker, carrying handle and shoulder strap. It weighs only 10 pounds. For additional information, write Raven Electronics Mfg. Co., 2130 W. Carroll Ave., Chicago 12, Ill., or use the Post Card on the Ill., or use the Post Card on Page 56. Circle No. 915.

Mobile Floodlighting Unit

This trailerized floodlighting unit generates its own electric power and is available with 300,000 or 500,000 candlepower. Each of its four floodlights can be individually adjusted to any desired height up to the maximum 18-foot extension. Lights pivot in a complete circle.

Generator capacity of Mobilite "A" (300,000 candlepower) is 6500 watts. It has eight extra outlets for the operation of power tools or other equipment. Model "B" (500,000 candlepower) has a 10,000-watt capacity generator and 12 extra outlets.

The Mobilite is designed to meet emergency needs of nighttime fire-fighting, as well as to supply engineers, park program directors, etc. with a powerful, easily mobile floodlight unit independent of public power sources. For additional information on this compact, sturdily engineered unit, write Pacific Mercury, 14052 Burbank Blvd., Van Nuys 1, Calif., or use the Post Card on Page 55. Circle No. 941.



$4 Million Clay Pipe Plant on East Coast

The American Vitrified Products Company, Cleveland, Ohio, will construct a new $4 million plant for the production of vitrified clay pipe and allied products on the East Coast.

According to company President E. L. Miller, who made the announcement, the plant is to be located in Somerville, N. J., and will be completely automated and the most up-to-date and technically advanced in the industry.

It will be situated on an 87-acre tract of land, adjacent to two main railroads and highways and will enable American Vitrified to make quick deliveries to the eastern seaboard and New England area. The company was previously unable to adequately serve this area because of restrictive freight rates.

New Numeric Accounter

A numeric data processing accounting machine, announced as an outgrowth of Burroughs' famed Sensimatic, fills the middle ground between the company's small portable book-keeping machines and high speed electronic data processing equipment.

This electro-mechanical accounting machine will obsolete thousands of conventional bookkeeping machines, and speed bookkeeping that requires two original records.

Ray R. Eppert, Burroughs Corporation president, said the new series of electro-mechanical machines for business and industry, represents one of the most important advances in conventional bookkeeping equipment in the past decade.

The machine is designed to improve all bookkeeping operations that require two original records, such as a statement and ledger, and prints both records simultaneously. All ten models are equipped with a "program panel" that controls the automatic functions of the machine, telling it to add, subtract, retain figures for later use, print out totals and the like.

For municipal application information and complete specifications, write Burroughs Corporation, Detroit 52, Mich., or use the Post Card on Page 56. Circle No. 923.

ABOUT PEOPLE

Word has been received of the death of Charles Yeomans, co-founder and chairman of the board of directors of **Yeomans Brothers Company,** Melrose Park, Ill., manufacturers of centrifugal pumps, pneumatic sewage ejectors, compressors and waste treatment equipment. Mr. Yoemans joined his brother Edward in founding the 61-year-old firm immediately following his graduation from Princeton University, and succeeded his brother as president of the firm in 1923. He was elected to serve as chairman of the board of directors in 1952.

C. Yeomans

Tony Malizia, vice-president and sales manager of **McDonough Power Equipment Inc.,** McDonough, Ga., was elected a director of the National Lawn Mower Institute for a three-year term.

A. H. (Woody) Wiener, president of the **Standard Chlorine Chemical Co., Inc.** of South Kearny, N. J., and its subsidiaries, The Cloroben Corp. and Standard Naphthalene Products Co., Inc., recently embarked on a business trip that will take him to England, France and the Scandinavian countries, where he will participate in a series of meetings with municipal authorities on the growing use of Cloroben throughout Europe.

James G. Walker, who has been appointed staff manager for architect, engineer-contractors, will serve as a special assistant and consultant to J. A. O'Brien, senior vice president for sales, **Johns-Mansville Corp.,** New York 16, N. Y.

John A. Snarenberger recently appointed sales engineer for **Nordberg Manufacturing Co.,** Milwaukee, Wis., will assist J. T. Adams, Kansas City district manager, in municipal, industrial and pipe line sales for Nordberg's two and four-cycle engines.

Chain Belt Company, Milwaukee 1, Wis., has announced the promotion of Robert V. Krikorian to the newly-created position of manager, construction machinery section and that of Charles A. Christy to sales manager of the section.

Edwin T. Goree has been appointed vice-president in charge of sales for the Koehring Division of **Koehring Company,** Milwaukee 16, Wis., according to an announcement by E. A. Brugger, president of the division.

George C. White has been named the manager of the chlorinator division of **Wallace & Tiernan** for United States and Canada. His replacement as division manager for the San Francisco area is Otto Bejcek.

R. G. Hearst has been appointed general sales manager for **"Quick-Way" Truck Shovel Co.,** Denver, Colo., according to an announcement by G. R. Rigdon, executive vice president of the company.

Dave Benham, senior partner of **Benham Engineering Company,** consulting engineers, Oklahoma City and Muskogee, Okla., was recently appointed to the five-member Board of Engineering Registrations of the State of Oklahoma for a five-year term.

D. Lynn Churchwell, long a direct representative in Virginia, North Carolina, Maryland, Delaware and part of West Virginia for **Ernest Holmes Company,** manufacturers of Holmes - Owen front-end loaders and automobile wreckers, has been promoted to the position of sales manager. He will be assisted by Val Reich, Jr., assistant sales manager, and Robert L. Freeman, sales engineer.

D. L. Churchwell

E. J. Seifert, president, **Pettibone Mulliken Corporation,** Chicago 51, Ill., has announced the appointment of Jack C. Rogers as sales manager of the Speed Swing Division.

Douglas E. McCuaig has been appointed product engineer in charge of the Hydrocrane Division of **Bucyrus-Erie Co.,** South Milwaukee, Wis.

Smith & Loveless, Inc., Lenexa, Kans., manufacturers of factory-built sewage lift stations and sewage treatment plants, has named Frank G. Weis as chief research engineer to head its newly-created research division. Mr. Weis is well known as the developer of the "Mono-O-Ject" and "Du-O-Ject" pneumatic ejector sewage lift station. Other appointments are those of Charles R. Faes as chief production engineer and Cecil Waage as chief draftsman in the product engineering division.

F. G. Weis

L. F. Heckman, veteran member of **The Union Metal Manufacturing Co.** organization, and most recently general sales manager for this Canton, Ohio, manufacturer of poles for street and highway lighting and traffic signals, has been promoted to the position of vice president in charge of sales and made an official member of the Management Committee.

L. F. Heckman

Personnel appointments announced by Frank Weems, New York district manager for **The Eimco Corp.,** Salt Lake City 4, Utah, include C. H. Patterson Knight, to the Montreal sales branch of the corporation; and Arthur E. Poole, to the sales-engineering staff of the Filter Division.

Frank Marold, sales vice president of **Griffin Wheel Company Pipe Division** has announced the appointment of John L. Larson as sales representative, operating directly from Council Bluffs, Ia.

Robert S. Wood, president of **Pylacon Inc.,** Toledo, Ohio, has announced the appointment of John E. Orloff as a vice president of the company.

C. H. Walker H. A. Harrison

Recent executive changes at **Daybrook Hydraulic Division,** Young Spring & Wire Corp., Bowling Green, Ohio, include the appointment of H. A. (Gus) Harrison as advertising and sales promotion manager and the naming of Carl H. Walker to the newly created company position of manager, municipal sales, which places him in charge of national sales for the Daybrook Power Packer continuous collection body for trucks, and the Sani-Tainer method refuse containers for use on commercial routes.

The Toledo Pipe Threading Machine Co. has appointed as Division Sales Managers C. E. Hartsing to the Western Division; Blake M. Wilson to the Central, and James H. Birch to the Eastern Division. It is felt that having a sales manager for each area will result in

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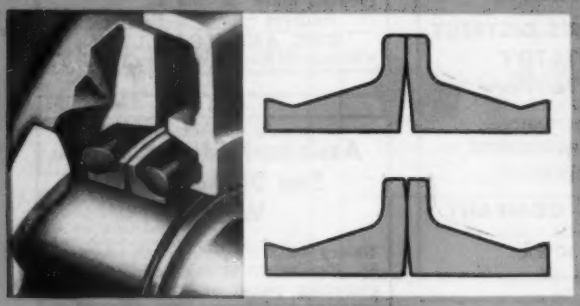

lapped faces . . . smoother than glass. These faces taper slightly toward the inner edge forming a sealing area at the outer edge. As wear occurs, the sealing area moves inward, maintaining a perfect seal through thousands of hours.

The "O" rings keep constant pressure on the metal rings. Lubricant can't get out. Grit can't get in. There are no springs or diaphragms to weaken, wear or become damaged. "O" rings are made of special compound to resist oil, heat and cold.

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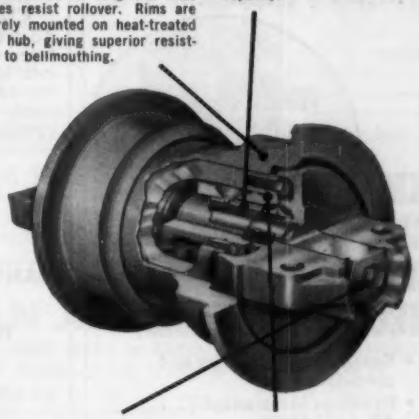

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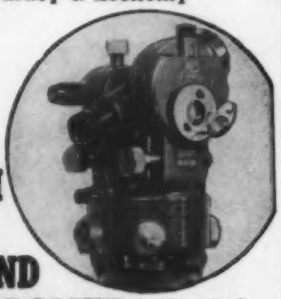

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About People

closer cooperation and better service to Toledo's distributors and customers. The company's home address is 1445 Summit St., Toledo 4, Ohio.

Roy E. Mullin, who for the last year has been general sales manager of **D. W. Onan & Sons, Inc.,** Minneapolis, Minn., a major manufacturer of electric generating plants, has been promoted to the position of vice president, sales. He succeeds Hiram Hascall, retired, and will be responsible for sales and marketing activities internationally.

R. E. Mullin

W. A. Romain, president of **Sherman Products, Inc.,** Royal Oak, Mich., leading manufacturer and distributor of tractor-mounted earth moving, soil preparing and materials handling equipment, has made known the promotion of George Hindmarsh to parts manager.

The appointment of C. A. Weaver to the post of service manager, Tulsa Field office, has been announced by George Edick, sales manager Domestic Division of **The Cooper-Bessemer Corp.,** Mt. Vernon, Ohio.

Tom Barney, new general sales manager for **Pfaff & Kendall,** Newark, N. J., manufacturers of street and highway lighting standards and traffic signal and sign supports and spans, will be in charge of all sales functions, including the lighting and traffic divisions as well as the special products division.

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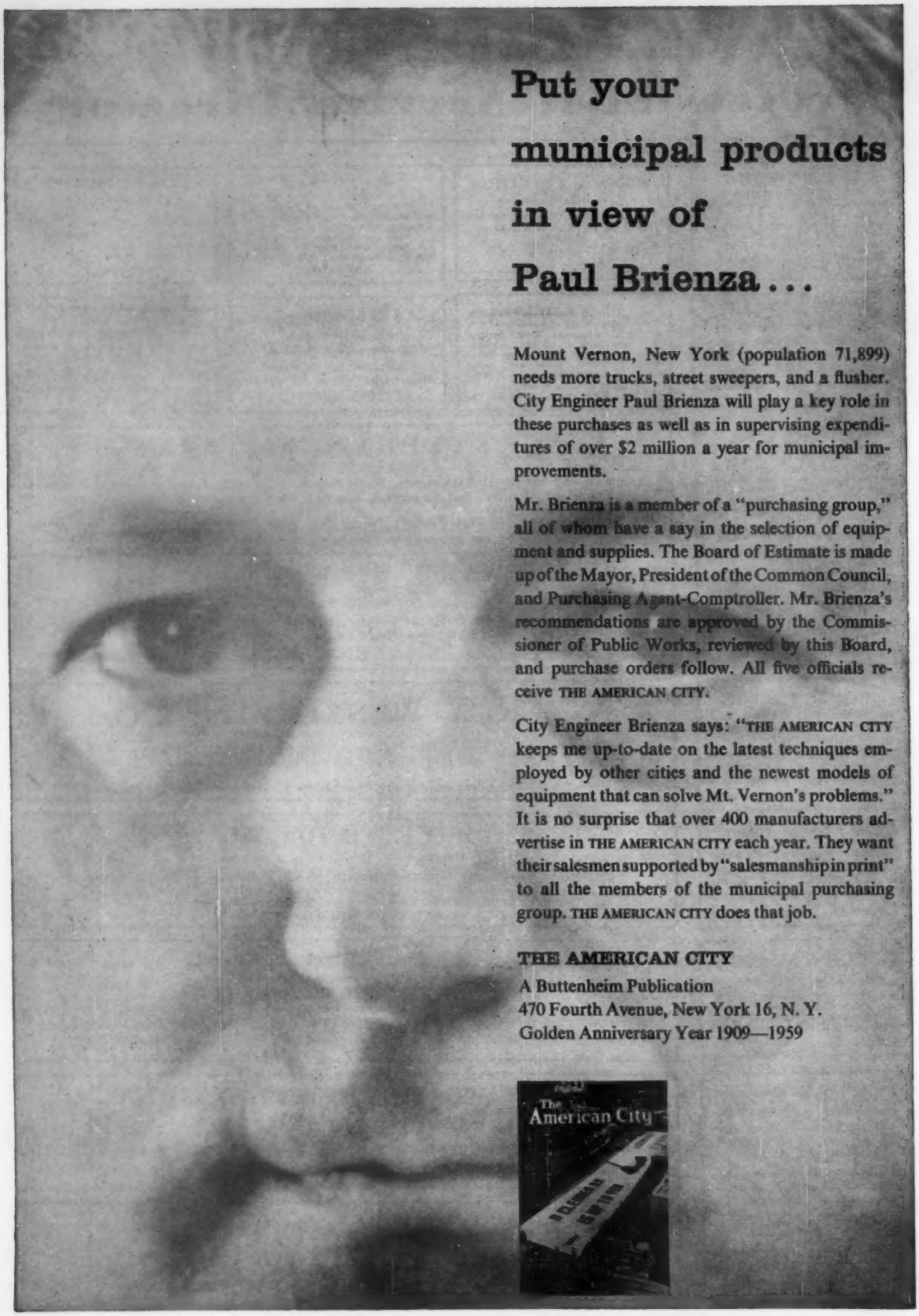

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Index to Advertisers

Professional Service Directory, 283-293

Adams Co., R. P. 270
Alabama Pipe Co. 189
Allis-Chalmers 53, 72, 73, 254
Aluminum Company of America 198
American Bitumuls & Asphalt Co. 159
American Steel Foundries, Inc. 173
American Telephone & Telegraph Co 4
Anchor Post Products, Inc. 191
Anthracite Equipment Corp. 278
Armco Steel Corp. 179
Asplundh Chipper Co. 166
Austin-Western 216, 217
Automatic Signal Div., Eastern Industries, Inc. 133
Automatic Voting Machine Corp. 266

Badger Meter Co. 176
Beaumont Birch Co. 244
Bell Helicopter Corp. 256
Bell Telephone System 4
Bennett Mfg. Co. 249
Ben-Ko-Matic, Inc. 230
Boyertown Auto Body Works 262
Buckner Mfg. Co., Inc. 268
Bucyrus Erie Co. 246
Buffalo Meter Co. 180
Buffalo Turbine Agricultural Equipment Co. 215
Burr Chemical Co. 207
Burroughs Corp. 248

Calgon Co. 16, 17
Cast Iron Pipe Research Association 79, 80, 81
Cataphote Corp. 128
Caterpillar Tractor Co. 10, 121, 184, 281, 296
Centriline Corp. 150
Chain Belt Co. 186
Champion Corp. 177
Chase Manhattan Bank 52
Chicago Bridge & Iron Co. 12
Clark Equipment Co. 298
Clark Wilcox Co. 207
Clow & Sons, James B. 14, 15
Cole Mfg. Co., R. D. 82
Columbia-Southern Chemical Corp. 154
Combustion Engineering 30, 31
Conveyor Co. 218
Cook Well Strainer Co. 181
Corning Glass Works 194
Cutler-Hammer, Inc. 200
Cyclone Fence Dept., American Steel & Wire Div., United States Steel Corp. 171

Darley & Co., W. S. 189
Darling Valve & Mfg. Co. 242
Dempster Brothers 238
Dietz Co., R. E. 75
Dolge Co., C. B. 82
Drake & Townsend, Inc. 236
Drott Mfg. Corp. 46, 47
Dual Parking Meter Co. 131
Duncan Parking Meter Corp. 140

Earthworm Boring Machine, Inc. 191
Eau Claire Sand & Gravel 245
Eddy Valve Co. 182
Emhart Mfg. Co., Maxim Div. 187
Enterprise Engine & Machinery Co. 170
Evinrude Motors 189
Expanding Sewer Machine Co. 258

Fairbanks, Morse Co. 66
Filotecnica Salmoiraghi, Inc. 241
Fitchburg Engineering Corp. 221
Flexible, Inc. 247
Flex-O-Lite Mfg. Corp. 144
Flink Co. 240
Ford Meter Box Co. 183
Ford Motor Co (Truck Div.) 210
Franklin Worsted Co. 268
Frink Sno-Plows, Inc. 250

Galion Iron Works & Mfg. Co. 77
Gamewell Co 164
Gamon Meter Div., Worthington Corp 188
Gar Wood Industries 60, 61
General Electric Co. 135, 136, 137, 138
General Electric Co., Com'l Eq. Div. 43
Gledhill Road Machinery Co. 207
Good Roads Machinery Co. 272
Gravely Tractors, Inc. 74
Greenlee Tool Co. 206
Griffin Wheel Co. 173

Harley-Davidson Motor Co. 45
Hayward Co. 74
Heath Survey Consultants, Inc. 178
Hercules Powder Co. 158
Herschell Co., Inc., Allan 272
Hersey Mfg. Co. 85
Hough Co., Frank G. 40, 41
Huber-Warco Co. 152
Hydepak Div., Hobbs Trailer Co. 212
Hydrauger Corp., Ltd 86
Hydro E-Z Pack. Div., Hercules Galion Prod., Inc. 196

Ideal Electric & Mfg. Co. 74
Illinois Stoker Co. 272
In-Sink-Erator Mfg. Co. 50
International Harvester Co. 46, 47
International Harvester Co. 87
International Salt Co. 26
Irving Subway Grating Co. 261

Johns-Manville Co. 204

Keasbey & Mattison Co. 168, 169
Kelly-Creswell Co. 244
Kennedy Valve & Mfg. Co. 222
Kern Instruments, Inc. 282
Kerrigan Iron Works Co. 139
Klett Mfg. Co. 274
Kohler Co. 199
Koppers Co., Inc. 83

Lake Shore Markers Inc. 259
Lawson Co., F. H. 145
Layne & Bowler, Inc. 35
Lock Joint Pipe Co. 39
Ludlow Valve Mfg. Co., Inc. 21
Lyle Signs Inc. 266

M-B Corp. 199
M & H Valve & Fittings Co. 58
Mack Trucks, Inc. 32
Magee-Hale Park-O-Meter Co. 146
Massey-Ferguson Inc. 6
McGuire, W. R. 244
Mercoid Corp. 213
Mi-Co Meters 44
Minnesota Mining & Mfg. Co. 124
Miro-Flex, Co., Inc. 270
Mitts & Merrill 197
Mobil Sweeper Div. of the Conveyor Co. 218
Mobile Aerial Towers, Inc. 68
Moline Malleable Iron Co. 78
Monarch Road Machinery Co. 278
Morse Boulger, Inc. 203
Morton Salt Co. 57
Motorola Communications & Electronics, Inc. 49
Mueller Co. 63, 172

National Lead Co 19, 20
Neenah Foundry Co. 274
Neptune Meter Co. 88
Netco Div., Clark-Wilcox Co. 276
Newark Brush Co. 258
Newport News Shipbuilding & Dry Dock Co. 260
Nichols Engineering & Research Corp. 84
Nordberg Mfg. Co. 208
Northern Gravel Co. 86

O'Brien Mfg. Co. 65
Oliver Corp. 237
Omaha Body & Equipment Co. 209
Onan & Sons, Inc., D. W. 205
Oshkosh Motor Truck, Inc. 69

Pacific Mercury Co. 191
Pak-Mor Mfg. Co. 297
Palmer Filter Equipment Co. 276
Parsons Co. 220
Pax-It Equipment Co., Inc. 252
Pfaff & Kendall 167
Pick-Nicollet Hotel 278
Pittsburgh-Des Moines Steel Co. 71
Pittsburgher Hotel 207
Portland Cement Association 264
Preload Co., Inc. 245
Price Brothers 174

Radiator Specialty Co. 274
Recordak Corp. 227
Revere Electric Mfg. Co. 162
Rhodes, Inc., M. H. 122
Rolatape, Inc. 241
Rust-Oleum Corp. 67

Sanfax Co. 147
Seagrave Corp. 151
Sherman Products, Inc. 24
Shoup Voting Machine Co. 18
Sicard Industries 148, 149
Smith & Co., Inc., Gordon 276
Standard Change Makers 126
Swenson Spreader & Mfg. Co. 255

Tarrant Mfg. Co. 155
Tennant Co., G. H. 214
Tennessee Corp. 86, 209
Texaco, Inc. 2
Thiokol Chemical Corp. 51
Tractor & Implement Div., Ford Motor Co. 37, 38
Tropical Paint Co. 268

U-C Lite Mfg. Co. 209
Union Metal Mfg. Co. 142, 143
U. S. Parking Corp. 228
United States Pipe & Foundry Co. 28, 29
U. S. Rubber Co., Mechanical Goods 64

Vega Industries, Inc. 278
Veon Chemical Corp. 156, 157
Vermeer Mfg. Co. 231

Wald Industries, Inc. 160
Wallace & Tiernan, Inc. 62
Washington Aluminum Co. 258
Waukesha Motor Co. 8
Wausau Iron Works, Inc. 82
Wayne Mfg. Co. 23
Weil Pump Co. 76
Westinghouse Electric Corp. 232, 233
Wheeling Corrugating Co. 165
White Diesel Engine Div. 59
Wild Heerbrugg Instruments, Inc. 48
Wisconsin Motor Corp. 70
Wood Brothers Mfg. Co. 147
Wood Co., John 163
Wood Co., R. D. 190
Woodward Iron Co. 224
Worthington Mower 235

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